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Upper Columbia River Basin Draft Environmental Impact Statement

Volume 2 - Appendices

May 1997

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Upper Columbia River Basin

Draft Environmental Impact Statement

Volume 2 ~ Appendices

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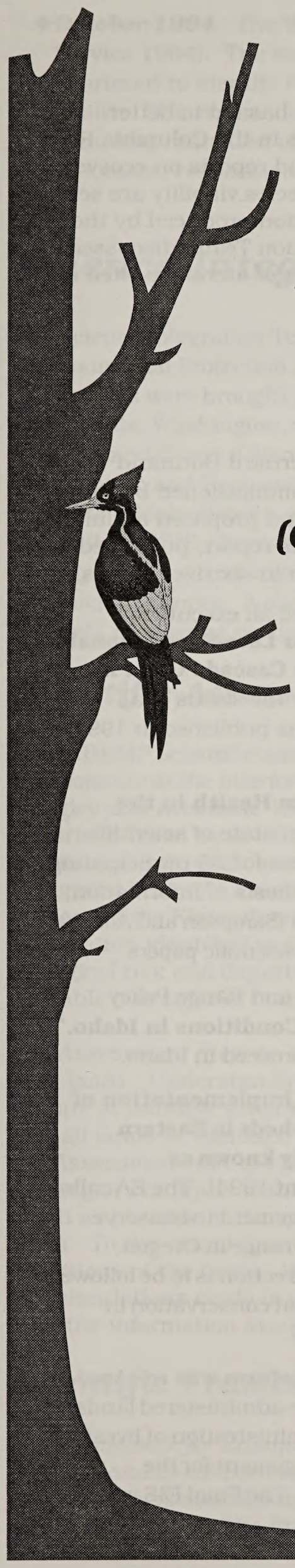


Appendix A Scientific Background, Legal Guidance, and Current Plans

(Comparable to Eastside Appendix 1-1)

This Appendix contains the following items:

- *Scientific Background*
- *Legal Guidance*
- *Current Plans and Their Approval Dates*

Scientific Background

Increased scientific understanding of ecosystem processes and functions has led to better awareness that many forest, rangeland, riparian, and aquatic ecosystems in the Columbia River Basin are becoming less resilient. Among the recent research, studies, and reports on ecosystem functions and processes, conservation biology, ecosystem health, and species viability are selected major studies listed here. In addition to these publications, new information produced by the Interior Columbia Basin Ecosystem Management Project Science Integration Team, discussed below, also contributed to the development of this EIS. For a complete list of literature cited in this EIS, see Chapter 5.

Major Studies

- ***Spring 1993.*** Richard Everett, Paul Hessburg, Mark Jensen and Bernard Bormann completed an **"Eastside Forest Ecosystem Health Assessment,"** commissioned by the U.S. Congress, which documented changes in eastside ecosystems and proposed an initial process for developing landscape prescriptions for management. This report, published in 1994 (Everett et al. 1994), focused largely on forest ecosystem health in six river basins.

- ***September 1993.*** The Eastside Forests Scientific Society Panel released an executive summary of the congressionally commissioned **"Interim Protection for Late-Successional Forests, Fisheries, and Watersheds for National Forests East of the Cascade Crest in Oregon and Washington."** The panel's mandate was to broadly review the status of all eastside forests and their associated resources. The complete report was published in 1994 (Henjum et al. 1994).

- ***November 1993.*** A scientific workshop, **Assessing Forest Ecosystem Health in the Inland West**, was convened in Sun Valley, Idaho to assess the current state of scientific knowledge about the health of forests in the Inland West. The goal was for 35 participating scientists and managers to produce a current, accurate, credible synthesis of information, from across disciplines, about forest ecosystem health. The full publication (Sampson and Adams 1994) contains an overview paper, five synthesis papers, and 16 individual scientific papers.

- ***December 1993.*** Jay O'Laughlin, Director of the Idaho Forest, Wildlife and Range Policy Analysis Group, and others published Report No. 11: **"Forest Health Conditions in Idaho."** The report addresses how sustaining healthy forest ecosystems might proceed in Idaho.

- ***March 1994.*** An Environmental Assessment (EA) was issued for the **Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California, commonly known as "PACFISH"** (USDA Forest Service and USDI Bureau of Land Management 1994). The EA calls for the FS and the BLM to implement interim direction for habitat management to conserve Pacific salmon, steelhead, and sea-run cutthroat trout throughout their range in Oregon, Washington, Idaho, and California. The EA also said that this interim direction is to be followed by longer-term management direction to address anadromous fish habitat conservation in these states. The decision record is expected to be signed early in 1995.

- ***May 1994.*** A draft environmental impact statement on **Rangeland Reform** was released, proposing changes in grazing regulations for all BLM- and Forest Service-administered lands. The provisions of this proposed rule are necessary to ensure proper administration of livestock grazing on public rangelands and bring about reform in rangeland management for the improvement, protection, and proper function of rangeland ecosystems. The Final EIS was issued in December 1994 (USDI Bureau of Land Management 1994b).

◆ ***October 1994.*** The **Western Forest Health Initiative** report was released (USDA Forest Service 1994). The team, established by Forest Service Chief Jack Ward Thomas, was chartered to identify Forest Service priority activities to restore western forested ecosystems health. The report identifies project priorities over the next 24 months for forest health, including reduction of catastrophic changes in key ecosystem structure, composition, and processes; restoration of critical ecosystem processes; and restoration of stressed sites.

Science Integration Team

The Science Integration Team (SIT) was composed of Federal employees from the Forest Service, BLM, Environmental Protection Agency (EPA), U.S. Geological Survey (USGS), and U.S. Bureau of Mines. Contractors were brought in for specific tasks and assignments. SIT headquarters were located in Walla Walla, Washington, with detached analysis units in Missoula and Kalispell, Montana; Boise, Moscow, and Coeur d'Alene, Idaho; Portland and Corvallis, Oregon; Seattle, Spokane and Wenatchee, Washington; and Reno and Las Vegas, Nevada. Its purpose was to develop a Framework for Ecosystem Management, a Scientific Assessment of the Interior Columbia Basin, and a Scientific Evaluation of EIS Alternatives. The SIT was organized around the functional groups of Landscape Ecology (physical and vegetative resources), Terrestrial Resources, Aquatic Resources, and Economics and Social Sciences. A staff of Geographic Information System (GIS) specialists supported the spatial and data processing needs of the science staffs.

Scientific Assessment

The ICBEMP scientific assessment resulted in two major documents. *An Assessment of Ecosystem Components in the Interior Columbia Basin Including Portions of the Klamath and Great Basins* (Quigley and Arbelbide 1996) presents information gathered and brought forward as Staff Area Reports (STARs) by five functional groups ~ Landscape Ecology, Terrestrial, Aquatics, Social, and Economics ~ through an examination of historical and current conditions and trends. An *Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basins* (Quigley, Graham, and Haynes 1996) integrates the information identified in the staff area reports, and uses integrity indices to examine the extent of ecological risk and departure from historical and potential vegetation conditions. It also discusses probable outcomes of management under various possible futures.

The *Assessment* drew on information from all lands within the basin, not just Forest Service or BLM lands. Understanding ecosystem components, structures, processes, and functions that operate at multiple geographic and temporal extents and providing context for decisions required that all lands be included in the *Assessment*. Because of the broad level of data resolution used in the *Assessment* and the large geographic extent, the *Assessment* relied primarily on remote sensing or readily available information from third party sources. An effort was made to use as much as possible of the existing information concerning the past and present condition of the basin. To the extent feasible, the SIT relied on existing simulation models to project future conditions of the basin. Where existing models were not available, new models were constructed and simulations made to project future conditions or interpretations, and inferences were made from the information available and model results.

Scientific Framework

The *Framework for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basins* (Haynes, Graham, and Quigley 1996) describes the principles and processes applicable for managing ecosystems in the interior Columbia River Basin at various geographic scales. The *Framework* also includes a discussion of how these principles and goals

might be used to implement ecosystem management within a process of managing risks (with risks defined as activities or events that relate to the likelihood of not reaching desired goals). Focusing on lands administered by the Forest Service or BLM, the *Framework* provides broad concepts and analytical processes recommended for ecosystem analysis, planning, management, and monitoring. The EIS process was consistent with the principles in the *Framework*.

Evaluation of Alternatives

The *Evaluation of EIS Alternatives by the Science Integration Team* (Quigley, Lee, and Arbelbide 1997) analyzes the effects of implementing each alternative management strategy. Outcomes of each alternative were evaluated relative to maintaining and/or restoring forest and rangeland health and productivity; and to maintaining economic, social, and cultural systems (including tribal trust responsibilities). The *Evaluation* provides an estimate of likely outcomes and cumulative effects from the alternatives across the entire project area.

Peer Review and Public Involvement

The scientific documents developed by the SIT were subjected to peer review using a modified blind process. A science review board (SRB) was formed, comprised of six members and two co-chairs. Reviewers were chosen from a list of knowledgeable scientists, land managers, and regulatory personnel by the SRB without direction from the SIT, ensuring an impartial but informed review process. SIT products were received by the SRB co-chairs and forwarded to board members for assignment to outside reviewers. The SRB sought diverse points of view, and forwarded those views to the SIT without integration, attempts at consensus, or accompanying advice. Specific charges of the review board included facilitating the review of scientific approaches and products of the SIT, facilitating the review of products for practicality and management feasibility, and ensuring a broad peer review of products that included diverse opinions.

The public had access to the science collection process through open SIT meetings and workshops and access to written material. During the early phases of the project, regularly scheduled public meeting were held, during which each team gave an update, progress report, shared draft reports, and answered questions. Reports from contractors and other draft materials were made available to the public through a variety of means including printed draft reports, electronic library, and workshops. The SIT made available to the public data layers and maps when the data was stable and documented. A data release policy was adopted and several of the themes were made available during the planning phase.

Legal Guidance

The following statutes and executive orders (as amended) constitute the major legal guidance for planning and management of lands administered by BLM and Forest Service. This list is not all inclusive but does represent the primary legal guidance considered in preparation of this EIS.

American Indian Religious Freedom Act of 1978 (42 USC 1996)
Animal Damage Control Act of 1931, as amended (7USC 426-426b)
Archaeological Resource Protection Act of 1979 (16 USC 470aa)
Bald Eagle Protection Act (16 USC 668)
Clean Air Act (42 USC 7401)
Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 USC 9601)
Endangered Species Act of 1973 (16 USC 1531)
Environmental Quality Improvement Act of 1970 (42 USC 4371)
Executive Order 11514, Protection and Enhancement of Environmental Quality, 1970
Executive Order 11644, Use of Off-Road Vehicles on the Public Lands, 1972

Executive Order 11988, Floodplain Management, 1977
Executive Order 11989, Off-Road Vehicles on Public Lands, 1977
Executive Order 11990, Protection of Wetlands, 1977
Federal Advisory Committee Act (FACA)
Federal Land Policy and Management Act of 1976 (FLPMA) (43 USC 1701)
Federal Water Pollution Control Act/Clean Water Act (33 USC 1251)
Fish and Wildlife Coordination Act (16 USC 661)
Forest and Rangeland Renewable Resources Planning Act of 1974, as amended (16 USC 1601)
Geothermal Energy Act of 1980 (30 USC 1501)
Geothermal Steam Act of 1970 (30 USC 1001)
Land and Water Conservation Fund Act of 1965 (16 USC 4601-4)
Materials Act of 1947 (30 USC 801)
Migratory Bird Conservation Act (16 USC 715)
Migratory Bird Treaty Act (16 USC 703)
Mineral Leasing Act of 1920 (Mineral Lands Leasing Act) (30 USC 181)
Mining Act of 1872 (30 USC 26)
Mining and Minerals Policy Act of 1970 (30 USC 21a)
National Environmental Policy Act of 1969 (NEPA) (42 USC 4321)
National Forest Management Act (NFMA) (16 USC 1600)
National Historic Preservation Act (16 USC 470)
National Trail Systems Act (16 USC 1241)
Recreation and Public Purposes Act (43 USC 869)
Resource Conservation and Recovery Act of 1976 (42 USC 6901)
Safe Drinking Water Act (42 USC 300f)
Soil and Water Resources Conservation Act of 1977 (16 USC 2001)
Surface Mining Control and Reclamation Act of 1977 (30 USC 1201 et seq.)
Taylor Grazing Act (43 USC 315)
Wilderness Act of 1964 (16 USC 1131)
Wild and Scenic Rivers Act (16 USC 1271)

Current Plans and Their Approval Dates

The Forest Service is required by the National Forest Management Act to revise forest plans every 10 to 15 years. The BLM, although not mandated by law to follow a particular revision timetable, generally revises plans on a similar schedule. The current plans for both agencies and their dates of approval are shown below.

Forest Service

Region 1	**Approval Date**
Bitterroot Forest Plan	September 1987
Clearwater Forest Plan	September 1987
Deerlodge Forest Plan	September 1987
Flathead Forest Plan	January 1986
Helena Forest Plan	May 1986
Idaho Panhandle Forest Plan	September 1987
Kootenai Forest Plan	September 1987
Lolo Forest Plan	April 1986
Nez Perce Forest Plan	October 1987
Region 4	
Boise Forest Plan	April 1990
Caribou Forest Plan	September 1985
Challis Forest Plan	June 1987

Humboldt Forest Plan	August 1986
Payette Forest Plan	May 1988
Salmon Forest Plan	November 1988
Sawtooth Forest Plan	September 1987

Bureau of Land Management

Idaho

Bennett Hills Management Framework Plan	July 1976
Big Desert Management Framework Plan	October 1981
Big Lost Management Framework Plan	December 1983
Bruneau Management Framework Plan	June 1983
Cascade Resource Management Plan	July 1988
Cassia Resource Management Plan	January 1985
Challis Management Framework Plan	July 1979
Chief Joseph Management Framework Plan	November 1981
Ellis-Pahsimeroi Management Framework Plan	September 1982
Emerald Empire Management Framework Plan	November 1981
Jarbidge Resource Management Plan	March 1987
Kuna Management Framework Plan	June 1983
Lemhi Resource Management Plan	April 1987
Little Lost Birch Creek Management Framework Plan	June 1981
Mackay Management Framework Plan	January 1984
Magic Management Framework Plan	June 1975
Malad Management Framework Plan	February 1981
Medicine Lodge Resource Management Plan	November 1985
Monument Resource Management Plan	April 1985
Owyhee Management Framework Plan	May 1981
Pocatello Resource Management Plan	January 1988
Sun Valley Management Framework Plan	December 1981
Timmerman Management Framework Plan	July 1976
Twin Falls Management Framework Plan	September 1982

Montana

Garnet Resource Management Plan	April 1986

Wyoming

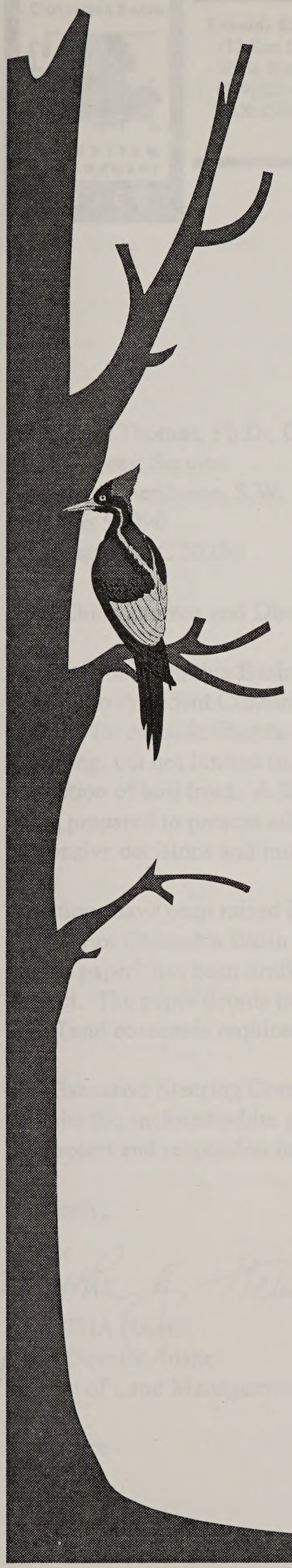
Kemmerer Resource Management Plan	April 1986
Pinedale Resource Management Plan	December 1988

Utah

Box Elder Resource Management Plan	April 1986

Nevada

Elko Resource Management Plan	March 1987
Paradise-Denio Resource Management Plan	July 1982
Wells Resource Management Plan	July 1985



Appendix B
Benefits and Risks of the Interior Columbia Basin Ecosystem Management Project

(Comparable to Eastside Appendix 1-5)

This Appendix contains the following items:

- *Joint Agency Cover Letter*
- *White Paper on the Benefits and Risks of the ICBEMP*

INTERIOR COLUMBIA BASIN ECOSYSTEM MANAGEMENT PROJECT

Eastside EIS Team
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(509)522-4030
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Upper Columbia River
Basin EIS Team
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Science Integration Team
112 East Poplar Street
Walla Walla, WA 99362
(509)522-4030
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File Code: (FS) 1920
Route to: 1920
(BLM) 1610

Date: July 21, 1995

Jack Ward Thomas, Ph.D., Chief
USDA-Forest Service
14th & Independence, S.W.
P.O. Box 96090
Washington, DC 20250

Mike Dombeck, Ph.D., Director
USDI-Bureau of Land Management
1849 C Street, NW
Washington, DC 20240

Dear Chief Thomas and Director Dombeck:

The Interior Columbia Basin Ecosystem Management Project (ICEMP) was initiated at your request to respond to President Clinton's July 1993 direction to develop a scientifically sound, ecosystem based strategy for eastside forests. Specifically, the Project responds to several critical broad scale issues, including, but not limited to, forest and rangeland health, the listing of Snake River salmon, and protection of bull trout. A Scientific Assessment and two Environmental Impact Statements (EISs) are being prepared to present and evaluate new information about these and other issues, to lead to responsive decisions and integrate new information into 74 land management plans throughout the Basin.

Questions have been raised in Congress and elsewhere about the need and rationale for the EIS portion of the Interior Columbia Basin Ecosystem Management Project. In order to answer these questions, a "white paper" has been drafted to inform parties who have expressed concerns or reservations about the Project. The paper details the relative risks and benefits of the EISs in responding to ecosystem, legal, social and economic requirements.

The Executive Steering Committee for the Interior Columbia Basin Ecosystem Management Project, submits the enclosed white paper for your review and recommend it be used by our agencies to explain the Project and respond to inquiries.

Sincerely,

Martha G. Hahn

MARTHA HAHN
State Director, Idaho
Bureau of Land Management

Enclosure

Benefits and Risks of the Interior Columbia Basin Ecosystem Management Project

The Interior Columbia Basin Ecosystem Management Project (ICBEMP) was initiated by the Forest Service and Bureau of Land Management (BLM) to respond to several critical broad scale issues including, but not limited to, forest and rangeland health, the listing of Snake River salmon, and protection of bull trout. A Scientific Assessment will evaluate new information about these and other issues. Two Environmental Impact Statements (EISs) will disclose information so that decisions can respond to issues and needs and replace, where appropriate, interim conservation strategies in up to 74 land management plans in the Basin.

There are four primary reasons for approaching the broader natural resource and related community issues with the method used in the ICBEMP approach:

* Issues like forest and rangeland health, Snake River salmon and bull trout can best be addressed at a regional level because the issues transcend administrative boundaries;

* Experience, research, and legal precedence have demonstrated a scientifically sound, ecosystem-based approach can better deal with these issues, where interrelated actions and effects are disclosed and incorporated into integrated management strategies;

* Addressing certain issues from a larger context is more cost effective than separate units conducting independent efforts;

* This approach responds to President Clinton's July 1993 direction to develop a scientifically sound, ecosystem based strategy for eastside forests.

I. Background

Since most current National Forest and BLM management plans have been in effect, ecological and socio-economic conditions have been changing. Increased scientific understanding of ecosystem processes and functions has led to better awareness that many forest, range, riparian, and aquatic ecosystems are becoming less resilient. Some plant and animal species populations dependent on these ecosystems are declining in numbers.

Undesirable effects on people from current conditions include declining and less predictable Federal timber availability and increasing competitive forces in the forest products industry, contributing to greater instability in employment for forest products workers. Livestock operators have been adversely affected by declining rangeland health and productivity. Declines in water quality, anadromous fish populations, species population viability, and access to some natural resources have reduced opportunities for many users of Forest Service and BLM lands, including the rights retained by Indian tribes.

One expression of public discontent with federal land management is more frequent and

aggressive administrative appeals and litigation, often involving larger areas and more complex issues. Appeals and lawsuits over Forest Service and BLM land management decisions, plans, and activities reflect an evolution in attitudes, beliefs, and values regarding resource conditions. Increasingly, appeals and lawsuits have focused on issues of broad scale, such as species viability, biodiversity, and cumulative effects, which have been difficult to successfully address because of the absence of a truly broad-scale dimension to BLM and Forest Service land management planning.

Even more significantly, the federal courts have been willing to enjoin the activities of the federal government over large geographic areas, e.g. *Seattle Audubon Society v. Lyons, Portland Audubon Society v. Lujan, Lane County Audubon Society v. Jamison, and Pacific Rivers Council v. Thomas*. The courts are expecting the federal government to address issues concerning broad-ranging species in planning level decisions of comparable scope. For instance, in *Lane County Audubon Society v. Jamison,* the Ninth Circuit held that a biological opinion had to be prepared on a broad-ranging plan to conserve the northern spotted owl, and not limit a biological opinion on the species covering all of BLM's timber sales. In the meantime, Judge Dwyer in the *Seattle Audubon Society* litigation enjoined the Forest Service timber sale program in the range of the northern spotted owl until there was not only a multi-regional plan in place, but also a multi-agency plan (including the BLM) in place.

Updating National Forest or BLM Resource Area plans concurrently is necessary if the federal government is to respond to broad issues in a timely and efficient manner and provide a rational basis for land management decisions. As evidenced by federal district court approval of the FEMAT strategy, this approach can work. PACFISH, Eastside Screens, and the proposed Inland Native Fish Strategy are interim strategies which respond to new conditions such as a species listing under the Endangered Species Act, and are designed to bridge the time gap between existing plans and adoption of long-term strategies. The Project will develop a scientific assessment, and two EISs and Records of Decision (RODs) based on a broad scale scientific assessment, one for the Upper Columbia River Basin, and one for the Eastside[1]. The RODs will simultaneously amend BLM Resource Area plans, National Forest plans, Forest Service Regional Guides, and provide for simultaneous consultation with regulatory agencies on plan amendments including replacing interim strategies such as PACFISH.

II. Risks and Benefits of the Project

Questions have been raised in Congress and elsewhere about whether the ICBEMP decision process is the proper method or strategy to address these broad scale issues.[2] The U.S. House of

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[1]The Eastside EIS covers BLM and Forest Service lands in eastern Oregon and eastern Washington. The Upper Columbia River Basin EIS covers BLM and Forest Service lands within the Columbia River Basin in Idaho, Montana, Nevada, Utah and Wyoming (Figure 1).

[2]U.S. Senator Larry Craig, in an April 21, 1995, letter to Dr. Jack Ward Thomas, Chief, Forest Service, stated, "I have come to the conclusion that there is merit to conducting ecoregion assessments to evaluate issues and concerns that arise on an ecosystem or regional basis . . . . However, neither the nature or purpose of these ecoregion assessments as described, nor their structure as they are being presently carried out, suggest that they can properly be used as decision-making tools."

Representatives has voted to terminate the Project before its planned completion. The report language with the legislation states that despite collecting important scientific information, "The Project has grown too large and too costly to sustain in a time of fiscal constraints and is drawing away personnel and funding that should be employed for on the ground management."

This White Paper responds to these concerns and perceived risks because they appear to be the ones which have influenced the decisions to oppose completion of the Project. There are, no doubt, other concerns about the Project that are not addressed in this paper.

Responses to Risks and Concerns:

1. **Loss of local control.**

Concern: This concern seems grounded in the way the Forest Ecosystem Management Assessment Team's (FEMAT) proposed plans were changed at the national level to address the old-growth timber/northern spotted owl issue. Additionally, interim strategies such as PACFISH, Eastside Screens and the Inland Native Fish Strategy are perceived to be imposed without satisfactory public participation. There is a perception that local control and influence are diminished when planning is done at a broad scale and could be subject to review at the national level.

Response: Deciding officials for the ICBEMP RODs are locally based, and include the Forest Service Regional Foresters and BLM State Directors from the Project area. The FEMAT Project deciding officials were the Secretaries of Agriculture and Interior. The Project EISs have more time to ensure extensive public participation to replace the interim strategies.

A Memorandum of Understanding will soon be signed by the ICBEMP Project leaders and the Eastside Coalition of Counties (EECC), the latter representing the respective Associations of Counties in the states of Oregon, Washington, Montana and Idaho, to further strengthen the role of local government in the Project. In a June 30, 1995 letter to U.S. Senator Mark Hatfield, the Association of Oregon Counties states:

U.S. Senator Slade Gorton has indicated in the *Walla Walla Union Bulletin*, June 29, 1995, he opposes "anything that takes a one-size-fits-all regulatory approach," and that rather than an over-arching study that looks at all federal land in the interior Northwest, there should be "watershed-by-watershed" studies that take into account specific local conditions.

U.S. Rep George Nethercutt, in a May 11, 1995, letter to U.S. Rep. Ralph Regula, R-Ohio, suggests that "The combined cost and contentiousness of implementing the resulting regulations from this study will yield little if any environmental benefits for this region." He also was quoted in the *Spokane Spokesman Review*, June 5, 1995, as saying, "There are no tangible results that give us any hope that the money has been well spent so far. I think we have to have some accountability here."

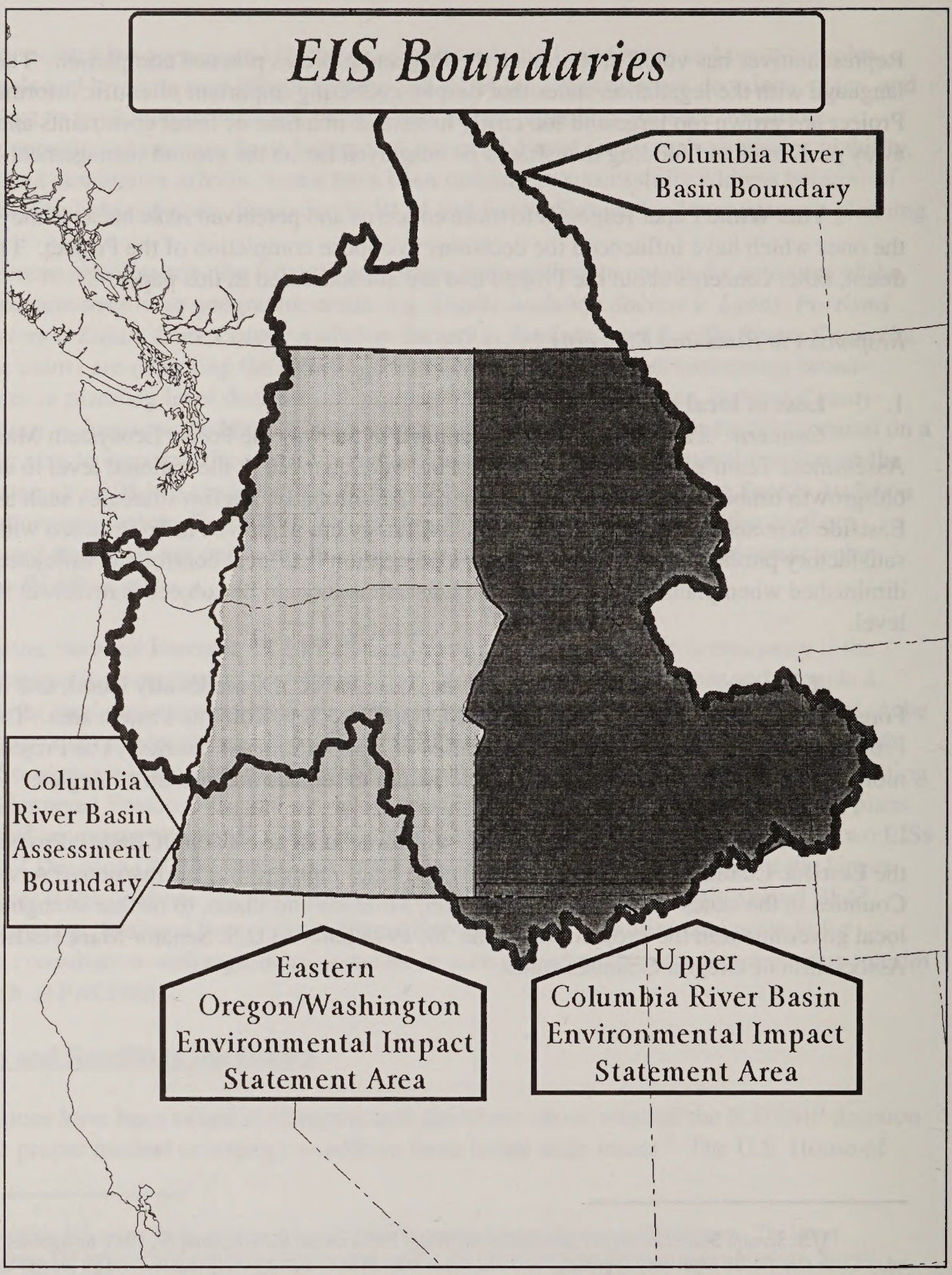
EIS Boundaries
Columbia River Basin Boundary
Columbia River Basin Assessment Boundary
Eastern Oregon/Washington Environmental Impact Statement Area
Upper Columbia River Basin Environmental Impact Statement Area

Figure 1

"This is the first time a multi-state county group has participated directly and from the beginning in a significant federal resource management planning process. There will likely be a positive impact on the federal work product, and a foundation has been laid for genuine, long-term improvements in federal/county communication. The National Association of Counties is following progress closely, because EECC is creating the model for county involvement in other regions."

In addition, the ICBEMP Project leaders have initiated dialogue with the states of Oregon, Washington, Idaho and Montana and requested that each Governor designate representatives with authority to advise the Project on matters important to the states as now allowed under the recent amendment to the Federal Advisory Committee Act (FACA) by the Unfunded Federal Mandates legislation. This is a great opportunity for county, state, federal and tribal cooperation which can depolarize the divided opinions about conservation and management that now exists.

Flexibility in achieving the goals and objectives of the ICBEMP decision will still be retained at the National Forest and Resource Area levels for project decisions and monitoring.

2. **Threat to Private property.**

Concern: The term "ecosystem management" appears to create an impression that both private and federal lands within a planning area will be subject to federal management. There are fears and concerns the Project puts private property and water rights at greater risk, especially as related to threatened and endangered species.

Response: Neither the Forest Service nor the BLM regulates private lands. Nor is it the intent of the Project to affect private property or water rights. Decisions will apply only to lands administered by the Forest Service and the BLM, not state or private lands. The Project agencies will continue to respect State authority in water allocation and in water rights adjudication, such as the Snake River Basin Adjudication.

3. **"Master Switch" risk.**

Concern: There is a perception that the larger the area in a planning effort, and the more resources and people included, the higher the risk that activities in all areas affected by such planning could be stopped at one time by appeals and litigation. Some fear that a court injunction involving a broad scale planning decision could operate as a "master switch" making resources unavailable for use. Agencies are perceived to be in the process of creating such a "master switch" that would favor environmental litigants.

Response: The master switch argument applied to this Project is invalid. The master switch has long existed, has already been used (*Seattle Audubon Society v. Lyons, Pacific Rivers Council v. Thomas*) before this Project existed, and will be available (and more likely successful) if the Project EISs are stopped. The basic legislation covering National Forests and BLM lands provide citizens the right to litigate against what they believe are violations of existing law. In other words, the "wiring" for the master switch is fully in place in extant federal laws and court interpretations.

Critics apparently assume legal insufficiency in the decisions to be made. Broad scale decisions will be made in light of recent legal standards for sufficiency, reducing the risk that decisions will be found lacking legally. If site-specific decisions were to be the general outcome of the Project, then the problem of legal sufficiency might be more difficult. This will not be the case, however. Most decisions will focus on broad or regional issues, with solutions stated as goals, objectives and guidelines, deferring site-specific fine scale decisions (with standards) to the project level. Furthermore, a "master switch" injunction would apply only if both existing management plans and decisions from the Project were found to be inadequate. Eliminating the Project EISs would remove the remaining line of defense against potential "master switch" injunctions.

With simultaneous amendments and consultations applying appropriate direction at appropriate scales across jurisdictional boundaries, there will be more consistent direction for "issues of scale," disclosure of cumulative effects, and greater probability of legal sufficiency of decisions. With up to 74 separate plan amendments and consultations, there would be a greater likelihood of inconsistent direction and assessment of cumulative effects, leading to increased risks of litigation and injunctions. The agencies would be much more vulnerable to the charge of not responding to new information. Understanding the new information from the Scientific Assessment would likely be uneven among personnel spread throughout the agencies. In contrast, the Project EIS interdisciplinary teams are very familiar with the emerging science products and more suited to conduct the analysis.

It is also a fact that a master switch operates in two directions, it can "turn on" just as it can shut down. By providing a legally sufficient basis for plan amendments with broad scale direction on issues such as species population viability, cumulative effects, and forest and range health, the Project can enable the agencies to maintain predictable, sustainable supplies of natural resources for people through turning the master switch to the "on" position.

4. **Unnecessary costs.**

Concern: There is a perception that the agencies have created a redundant layer of costly planning, with no prospects for efficiencies or savings in future planning.

Response: Project EISs that focus on broad and mid scale planning issues with simultaneous amendment of multiple plans and programmatic consultations will, at a minimum, be half as expensive as up to 74 separate plan amendments and consultations. In fact, expected efficiencies provided a significant part of the original justification for the project. Furthermore, Project costs are approaching 80 percent of the total planned for the three year Project life; the final 20 percent will yield nearly all the benefits.

Implementation of broad scale direction into individual Forest Service and BLM plans at the mid and fine scale levels will be cheaper since uniform goals, objectives and guidelines, with completed consultations, can be incorporated by reference rather than re-created time after time.

5. **Diminished "deliverability."**

Concern: Commodity outputs specified in existing plans have not been delivered for various reasons, affecting the credibility of the agencies' planning processes. Currently, National Forests in the Project area are producing less timber than their forest plans indicate is allowable. There is a perception that broad scale planning will further undermine the ability of National Forests to deliver outputs, and put people and resources at greater risk.

Response: The ICBEMP should increase, not decrease, "deliverability" of natural resources, by removing or repairing conditions that have limited delivery in the past. Those conditions have been principally appeals and litigation related to "issues of scale" such as cumulative effects and species population viability. The quantity of appeals and litigation may not decline, but the efficiency of Forest Service and BLM responses and the probabilities of prevailing should increase significantly. This should increase the predictability and sustainability of natural resources and result in increased support for the economic and/or social needs of people, cultures and communities.

6. **"One size fits all."**

Concern: The agencies responded to the listing of the Snake River salmon by implementing the PACFISH interim conservation strategy. Some perceive that detailed and inaccurate constraints and imprecise management were imposed (through PACFISH, Eastside Screens and the proposed Inland Native Fish Strategy), rather than letting managers deal with specific local conditions at the project level. The perception seems to be that the Project will extend rather than limit or resolve problems with the perceived "one size fits all" approach of PACFISH.

Response: The ICBEMP EISs and RODs will change interim direction, to more flexible broad and mid landscape ecosystem-based long-term strategies, to complement fine scale direction where applicable (e.g., PACFISH and Eastside Screens). The approach of the Project is to include *less* prescriptive "one size fits all" direction at the project or fine scale level, leaving those decisions to local managers. Most decisions will focus on broad and mid-scale problems, with solutions stated mostly in the form of goals, objectives and guidelines. This approach will help streamline consultation with resource agencies, as requested by the Idaho Congressional delegation in a March 31, 1994 letter to the Project.[3] Fine scale decisions (with standards) at the project level, after appropriate watershed analysis, will reduce the need for general application of standards which may be inaccurate and inappropriate for some locations.

7. **Authority.**

Concern: Allegations have been made that the agencies have exceeded their legal authorities by conducting the Project at a broad geographic scale.

Response: The decision in *Seattle Audubon Society v. Lyons* affirmed that the agencies

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[3]The letter from US Senator Larry Craig, US Senator Dirk Kempthorne and Congressman Mike Crapo recommended including the effort to streamline consultation with the Idaho PACFISH EIS, now superseded by the Upper Columbia River Basin EIS.

have the discretion to address their land and resource plans using a broad scale, ecosystem approach.

Conclusion. The ICBEMP, through the Scientific Assessment, the Upper Columbia River Basin Project EIS the Eastside EIS and their Records of Decision will:

-Develop "big picture" ecosystem management strategies that will strengthen multiple use management by providing sustainable resources for people;

-Take definitive action in response to many critical issues of broad scale (e.g., endangered species, species population viability, forest and range health, etc.) in one effort, saving money and time;

-Offer solutions to forest and rangeland health problems, that will result in sustainable resources and jobs;

-Refine PACFISH concepts with flexible approaches that will protect fish and other species and provide for needed management in both riparian and upland areas to keep ecological risks at acceptable levels;

-Resolve broad "big picture" problems that cross jurisdictional lines (e.g., salmon) and refine and improve interim strategies (e.g., PACFISH);

-Provide for species viability on an ecosystem basis, rather than with a species-by-species approach, thus reducing the chance of more listings and litigation;

-Provide a great opportunity for county, state, federal and tribal cooperation which can depolarize divided opinions about conservation and management.

Preparation of the broad-scale plans for the Interior Columbia Basin are expected to provide additional benefits:

1. **More effective analysis of cumulative impacts.** Cumulative impact analysis can be more effectively addressed at a broad scale. Ecosystem health problems can be more successfully resolved by using the best available science to design plans dealing with these broad-scale issues. Looking at these issues on a basin-wide level allows the agencies to develop and prioritize goals among the various administrative units of the federal agencies. That opportunity would not be possible if each unit was required to develop its plan independently of other units.

2. **Reduced vulnerability to legal challenges.** Legal challenges based on an alleged failure to disclose cumulative effects which cross the administrative boundaries of federal agencies are more easily defended when the agencies cooperate in broad-scale plans. If the agencies attempted to deal with the anadromous fish issue in separate planning efforts, either the agencies would end up coordinating much as they are now doing in the ICBEMP or they would spend far more time and

money in largely duplicative and potentially inconsistent planning. If each administrative unit planned independently of other units, opponents of the decisions would undoubtedly exploit the inevitable inconsistencies between plans. The risk could be so great that a large number, if not all plans could be enjoined until a coordinated planning effort dealing with broad-scale issues was completed.

3. **More consistent and favorable regulatory agency consultations.** If each administrative unit independently addressed the anadromous fish issue or other issues subject to regulation by other agencies, regulatory agencies would likely assume the "worst," i.e., that no further protection would be provided by other administrative units, unless plans for other units were already submitted for consultation. Courts also tend to make the same assumption (e.g., *Seattle Audubon Society v. Mosely).* This situation could lead to inconsistent treatment of agency plans by the regulating agencies. The Project EISs will avoid this problem. Alternatively, regulating agencies may also delay consultations on individual plans until all related plans are available.

Conclusion. To the extent that the perceived risks of the ICBEMP are reasonably addressed and answered here, the benefits (stated above) remain. There remains a possibility that the Project is not entirely free of risk. Large scale injunctions from litigation based on unforseen events or new information might still occur, and all issues of large scale will not be perfectly resolved. But, without the assessment and EISs, these risks will be much greater, and critical and urgent issues such as the forest ecosystem health and anadromous fish problems will receive less quality attention.

In short, the failure to complete the entire ICBEMP as currently planned, would place the natural resources and people in the interior Columbia River Basin at greater risk.

The following sections provide documentation which support the above conclusions.

The following sections provide additional information and analysis which support the response and conclusions in the first half of the paper.

III. Background and Context

Since most current National Forest and BLM management plans have been in effect, ecological and socio-economic conditions have been changing significantly. Forest and rangeland ecosystem health has been deteriorating, as evidenced by increasing occurrence of uncharacteristic insect and disease outbreaks, intense wildfires, and the spread of exotic plants. Concern about the future of threatened, endangered, and sensitive species has been increasing, as evidenced by additional listings under the Endangered Species Act and proposals for such listings. Some people and their customs and cultures in communities dependent on National Forest System and BLM administered lands have been placed at increasing risk through actual or potential reductions in timber supply related to declining tree health and to administrative appeals and lawsuits over broad-scale issues such as water quality, species viability, and cumulative effects.

Increased scientific understanding of ecosystem processes and functions over the past decade has led to better awareness that many forest, rangeland, riparian, and aquatic ecosystems are becoming less resilient. Some plant and animal populations dependent on these ecosystems are declining in numbers. Cumulative human activities and management practices -- such as timber harvest, fire suppression, pest suppression, livestock use, road construction, mining and waste disposal, flood control and irrigation, fish harvest and hatcheries, increased recreation use, and urban expansion -- have affected natural resource conditions. Short- and long-term ecological processes and functions have been altered. These alterations have changed regional landscapes and generally increased the risks from insects, disease and large-scale fires, and exotic plant invasions. There is concern that under continued current management, these systems cannot sustain the level and variety of demands being placed on them and still provide for ecological integrity and resiliency, biological diversity, and desired levels of economic and social development.

Declines in forest and shrub and grassland ecosystem health are resulting in less resiliency and productivity for those depending on these resources. Declines in water quality, anadromous fish populations, species population viability, and access to some natural resources have reduced opportunities for many uses including customary and traditional uses by American Indians. They have also placed at risk the maintenance and protection of rights retained by Indian tribes. This also has had adverse effects on other segments of society who rely on benefits and services from National Forest and BLM lands. Declining ecosystem health conditions generally have increased the risk of large scale losses or damages to property, particularly from fire. Disruptions in the mosaic of successional stages created by natural disturbance events have resulted in a decline in the varied habitats and niches important for wildlife viewing, hunting, other forms of recreation and traditional cultural uses. Changes within the forests and rangelands have affected use patterns of certain wildlife species, sometimes creating adverse impacts on adjacent lands.

Undesirable effects on people from current conditions include declining and less predictable federal timber availability and increasing competitive forces in the forest products industry. These contribute to instability in employment for forest products workers. This has also contributed to economic and social hardships in communities with high employment in firms dependent on federal timber. Declining timber availability has affected people directly through job losses and less directly through predictable effects on government, especially county government with reduced funds for schools and roads. Declining and less predictable Federal timber availability has resulted from: (a) actual reductions of timber caused by declining forest health and (b) the challenges and complexities of meeting current regulations and policies in an ever-changing legal environment, especially in relation to broader issues such as ecosystem health, anadromous fish, and other wide-ranging species of concern. National and regional consequences have resulted from less predictability of resource flows from federal lands, with effects on the customs and cultures of communities dependent on public-land-based resources.

One expression of public conflict with federal land management is more frequent and aggressive administrative appeals and litigation, often involving larger areas and more complex issues. A ten-fold increase in administrative appeals of Forest Service decisions since 1985 has occurred -- from 200 to 2,000. The number of lawsuits has also increased significantly. In the years 1970 through 1989 the Forest Service was involved in 4.5 major NEPA-lawsuits per year. Between 1989-1995 the average increased to 11 NEPA related lawsuits per year. The nature of litigation has also shifted from individual development projects (like timber sales or grazing allotments) to land use decisions and management over large geographic areas.

The increasing number of appeals and lawsuits over Forest Service and BLM land management decisions, plans, and activities reflects an evolution in attitudes, beliefs, and values regarding healthy, productive, and well balanced resource conditions. Shifting demographic patterns and competing human values have intensified discussions and debate about the management of natural resources on public lands. The mix of goods and services historically provided by these lands may not reflect some values held important by some segments of the public. *Increasingly, appeals and lawsuits have focused on issues of broad or large scale, such as species population viability, biodiversity, and related cumulative effects. Such litigation has been difficult to address because of the absence of a truly broad-scale dimension to BLM and Forest Service land management planning. Such broad-scale planning should provide the context for more effectively resolving these complex issues.*

The current status of plans compels an approach that addresses issues at levels broader than a single land unit such as a National Forest or BLM Resource Area. As of January 1995 there were 54 lawsuits involving over 70 National Forest plans. Some of the cases are multi-National Forest challenges raising wildlife or fish issues that range beyond a single National Forest. Protection of wide ranging vertebrate species (including the northern spotted owl, Snake River salmon, bull trout, and grizzly bear), have been the principal issues in litigation of Forest Service and BLM decisions.

Even more significantly, federal courts have enjoined the activities of the federal

government on these larger planning area decisions, e.g., *Seattle Audubon Society v. Lyons, Portland Audubon Society v. Lujan, Lane County Audubon Society v. Jamison, and Pacific Rivers Council v. Thomas*. The courts, particularly in the Ninth Circuit Court of Appeals, expect the federal government to address broad-ranging species in planning decisions. For instance, in *Lane County Audubon Society v. Jamison,* the Ninth Circuit did not agree that the impacts to the spotted owl species as a whole had been adequately addressed in a biological opinion covering all of BLM's timber sales. The Court held that a biological opinion had to be prepared on a broad-ranging plan to conserve the listed species itself. In the meantime Seattle District Court Judge Dwyer, in the *Seattle Audubon Society* litigation, enjoined the Forest Service timber sale program within the range of the northern spotted owl until there was an adequate multi-regional and a multi-agency plan in place. A plan was rejected by him as inadequate in part because it did not include the BLM. He also was dissatisfied because the plan deferred consideration of other old growth associated species to individual National Forest plans.

Several legal cases influenced the decision to plan at the broad scale to address the management of late-successional and old-growth forests within the range of the northern spotted owl. The precedent for multiple Forest Plan and BLM resource management plan amendments was affirmed in *Seattle Audubon Society v. Lyons* 871 F. Supp. 1291. While the National Forest Management Act sets forth the process to develop individual forest plans, other laws such as the Endangered Species Act and the National Environmental Policy Act compel the agencies to address endangered species throughout their range.

Important links exist between legal requirements and the role of scientific information. For example, in the Pacific Northwest, the Forest Service and the BLM were found in violation of federal laws and regulations for either failure to consider the most recent demographic information on the northern spotted owl (Seattle Audubon Society v. Moseley, 1992), or failure to assess in an Environmental Impact Statement new information on the owl (Portland Audubon Society v. Lujan, 1992). A method is needed by which the agencies can respond to new scientific information in a timely and professional manner, include consultation with the public, and continue to function to produce goods and services.

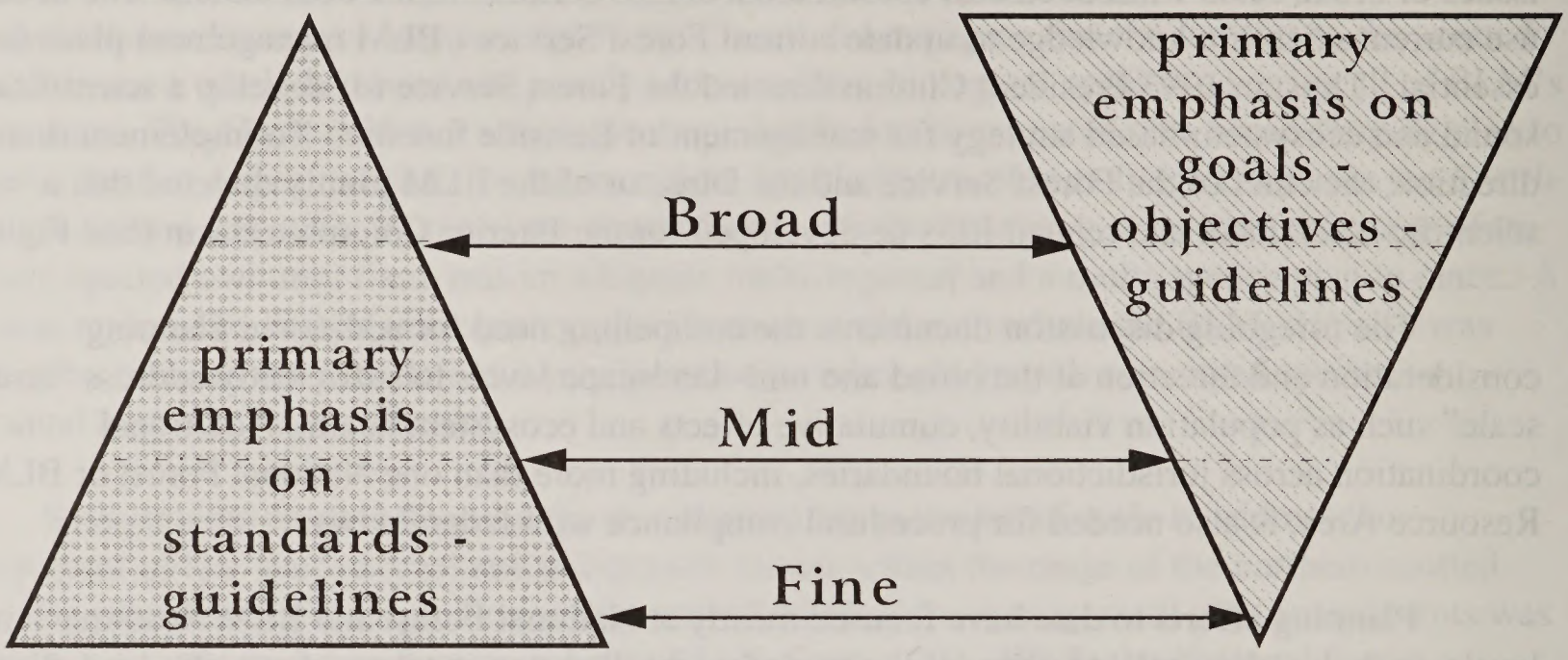
Litigation at the broad scale is also affecting the federal agencies within the Project area. Six National Forests in Idaho were simultaneously challenged in litigation over compliance with the Endangered Species Act in *Pacific Rivers Council et al. v. Thomas* for failure to consult with the NMFS on each forest plan. This lawsuit followed similar litigation on two National Forests in Oregon. Several forest plans are challenged over protection of the viability of bull trout in *Friends of the Wild Swan v. Thomas,* questioning agency compliance with the National Forest Management Act regulations.

The administrative response to these changed conditions has been to address these issues at the appropriate geographic scale where resolution is possible. In many instances it is beyond the capability of single administrative units of the Forest Service and BLM to respond to and address issues of broad scale without careful coordination across administrative boundaries. The need to use current scientific knowledge to update current Forest Service / BLM management plans is also essential. Thus, in 1993 President Clinton directed the Forest Service to "develop a scientifically sound and ecosystem-based strategy for management of Eastside forests." To implement that direction, the chief of the Forest Service and the Director of the BLM jointly directed that a scientific assessment and related EISs be developed for the Interior Columbia Basin (See Figure 1).

The foregoing discussion documents the compelling need for additional planning consideration and direction at the broad and mid- landscape levels to sufficiently address "issues of scale" such as population viability, cumulative effects and ecosystem health. Additional coordination across jurisdictional boundaries, including more than one National Forest or BLM Resource Area, is also needed for procedural compliance with federal laws.

Planning efforts to date have focused mostly at National Forest and BLM Resource Area levels, with decisions related primarily to management direction in terms of specific land allocations and standards and guidelines that regulate projects. The Forest Service has also adopted "Regional Guide" standards and guidelines applicable at broader levels to guide development of individual forest plans. Considerations of important ecological processes and functions at "mid" and "broad" landscape levels have seldom been considered in either Regional Guides or forest plans. The "Broad and Mid Scale Planning Effort" embodied in the Project EISs will allow for decisions that focus primarily on management goals, objectives and guidelines to address ecosystem issues, processes, functions, and people at the broad and mid-scale levels. These decisions are necessary to repair deficiencies in current National Forest and BLM Resource Area planning and would constitute amendments to Regional Guides and Forest or BLM Resource Area plans. A comparison of scale and form of decisions for different planning levels for National Forests and BLM lands is shown in Figure 2. In a general sense, National Forest and BLM Resource Area level planning emphasizes standards and guidelines at the project or fine scale, while the Broad and Mid Scale Planning Effort places primary emphasis on goals, objectives and guidelines at the broad, landscape level.

FIGURE 2. A COMPARISON OF SCALE AND FORM OF DECISIONS FOR DIFFERENT PLANNING LEVELS FOR NATIONAL FORESTS AND BLM LANDS



National Forest and BLM Resource Area Level planning

Broad and Mid Scale Planning Effort for National Forests and BLM lands

* Decisions focus primarily on specific land allocations and management direction and standards and guidelines that regulate projects (i.e. timber sales, grazing allotments) at the *Fine* scale.

* Ecological processes and functions at *Mid* and *Broad* landscape levels are seldom addressed.

* Regulatory agency (FWS, NMFS, and EPA) consultations focus generally at the project /*Fine* scale.

* Decisions focus primarily on management direction, goals, objectives and guidelines to address ecosystem issues, processes, functions, and people at the *Broad* and *Mid* scale levels.

* Land allocations and management direction and standards at the *Fine* or project level are seldom addressed.

* Regulating agency consultations (FWS, NMFS, EPA) focus primarily at *Mid* and *Broad* scale levels.

Generalized Scales of Decisions:

Broad = River Basins; hundreds of thousands of acres
Mid = Watersheds; sub basin
Fine = Project l - (timber sales, grazing allotments, etc.)

Generalized Forms of Decisions:

Broad ➡ Goals - Objectives - Guidelines
Mid ➡ Goals - Objectives - Standards - Guidelines
Fine ➡ Goals - Objectives - Standards - Guidelines

IV. Analysis and Evaluation Comparing Planning Approaches

To help determine the risks and benefits of broad scale planning and implementation through simultaneous plan amendments and regulatory agency consultations, the responses of National Forest and BLM Resource Area level planning, and the Broad and Mid Scale Planning Effort to current ecosystem problems, legal requirements, and social and economic needs, were assessed and compared (Table 1).

The requirements listed in column "A." in Table 1 are taken or inferred from Section III of this paper. The planning approaches (columns B. and C.) are as portrayed in Figure 2. Assessments were made on the basis of the estimated responses of the different approaches exclusively, to the requirements.

In general, responses of the Broad and Mid Scale Planning Effort to requirements rated higher compared to the responses of National Forest and BLM Resource Area level planning efforts.

For item 1 (options to solve ecosystem problems), National Forest and BLM individual unit planning may define desired ranges of future conditions judged necessary for individual units, but these will likely be insufficient at broad and mid scale levels. Experience also shows that cumulative impacts of large scale issues(wide ranging species viability, forest and rangeland health, etc.) cannot be effectively addressed on an individual unit basis.

Public perception and agency opinions affirm that because broad scale context is poorly understood at the individual unit plan level, decisions on broad scale issues cannot be successfully resolved at that level. However, National Forest and BLM Resource Area level planning provide mid and fine scale information on local conditions, including local public opinion, necessary to ultimately refine and successfully implement broad scale management strategies.

Broad scale plans will employ the best available science to provide for successful resolution of broad and mid scale ecosystem health problems. These plans will also be designed to meet recent legal sufficiency requirements for broad scale issues. To the extent that the lack of these provisions has limited the economic and social needs of people, people should be strongly benefitted by their presence, through more predictable and reliable availability of natural resources.

For item 2 (legal requirements), if broad scale ecosystem issues and needs are implemented through 74 separate National Forest and BLM Resource Area plan amendments and agency consultations as indicated under column B, activities leading to services and uses by people in rural public land dependent communities will likely continue to be challenged on a unit-by-unit basis or in coordinated litigation that addresses several units in one effort. Challenges will likely be based on the inability to disclose the cumulative effects across jurisdictional lines for broad scale issues. The additional time needed to organize and

Table 1. A comparison of the responsiveness of National Forest and Bureau of Land Management Resource Area level planning, and Broad and Mid Scale Planning Addition, and planning amendment approaches to ecosystem problems,

legal requirements, and related economic and social needs.

Ecosystem, Legal and Social and Economic Requirements	A.	Planning Responses B. National Forest and BLM Resource Area Level Planning and Unit-by-Unit Plan Amendment and Consultation	C. Broad and Mid Scale Planning Addition and Simultaneous Plan Amendment and Consultation
1. Improve options for resolving compelling broad/mid-scale ecosystem problems.			
a. Maintain long-term ecosystem health and integrity.			
(1)	Establish desired ranges of future conditions of landscapes for vegetation and hydrology.	Moderate	High
(2)	Refine interim direction for PACFISH and INFISH based primarily on broad and mid scale ecological processes and functions.	Moderate	High
(3)	Establish primarily broad and mid scale desired ranges of future conditions for species population viability.	Low	High
b. Support the economic and/or social needs of people, cultures and communities.			
(1)	Contribute to the viability and resilience of human communities.	Low	Moderate-High
(2)	Increase availability and deliverabiliy of resources through improved ecosystem health and an improved litigation record relative to plan implementation, primarily at the broad and mid scale levels.	Low	Moderate-High
2. Respond to legal requirements in a manner that increases probabilities of prevailing in litigation over broad and mid scale issues.			
a. Maintain long-term ecosystem health and integrity.			
(1)	Improve response to issues related to long-term sustainability and cumulative effect of connected actions occurring at broad and mid scales.	Low	Moderate-High
(2)	Improve consultation with regulatory agencies through focus on broad and mid scale considerations.	Low	High
b. Support the economic and/or social needs of people cultures and communities.			
(1)	Reduce risk of legal injunctions and litigation losses through improved plan response to broad and mid scale issues.	Low	Moderate-High
(2)	Maximize options for providing continuity of resource delivery systems through increased legal sufficiency on issues of broad and mid scale.	Low	Moderate-High
3. To accomplish #1 and #2 above using the most cost effective planning process and opportunities for informed public participation.			
a.	Cost-effective plan amendments	Low-Moderate	Moderate-High
b.	Effective and equitable public involvement	Low-Moderate	Moderate-High
c.	Efficient and effective regulatory agency consultations	Low-Moderate	High

carry out 74 individual plan amendments, including those to Forest Service Regional Guides, will likely increase the time in which current plans are vulnerable to litigation and injunction, thereby increasing the vulnerability of ongoing and proposed projects and activities which contribute to community viability.

Successful challenges could lead to effects on programs similar to those in the Pacific Northwest related to the northern spotted owl, and those related to the Pacific Rivers Council's challenge to six National Forest plans in Idaho and two in eastern Oregon.

Seventy four separate plan amendment efforts have a greater likelihood of being inconsistent and lacking in comprehensive use of information, than a simultaneous, multiple amendment process that applies appropriate direction at appropriate scales across jurisdictional boundaries.

Regulatory agency consultations will reflect broad and mid-scale dimensions that are now lacking. Existing fine scale, site specific standards will be refined and complemented with direction reflecting desired conditions for broad scale ecological functions and processes. The result will be more realistic, flexible direction.

For item 3, 74 individual National Forest and BLM Resource Area plan amendments and regulatory agency consultations reflecting needed direction to respond to the requirements as indicated in column B would be very costly. To insure proper public input, the process could also be very lengthy, offering significant opportunities for legal challenge. By comparison, following the Broad and Mid Scale Planning Effort (Item C), costs would not exceed those remaining for the Upper Columbia River Basin and Eastside EISs (less than $10 million) and amendments and consultations at the broad scale would be complete when the RODs were signed.

If the assumptions of the analysis are accepted, it seems clear that current National Forest and BLM Resource Area level planning is insufficient to meet ecosystem, legal, and socioeconomic requirements at the broad, landscape level. However, taken alone, broad and mid scale planning is also insufficient to meet fine scale or project level requirements. This is shown in Figure 3. The apparent necessary and sufficient condition is therefore, for the two approaches to be applied in a complementary way, and in a way that offers the greatest social and economic efficiency: simultaneous amendments of National Forest plans and Regional Guides, and BLM Resource Area plans, including one-time regulatory agency consultations on plan amendments.

A = Broad and Mid Scale Planning Effort
B = National Forest and BLM Resource Area level planning
C = Overlap of both approaches through compatible, complementary direction implemented through plan amendments in the Broad and Mid scale planning process. **

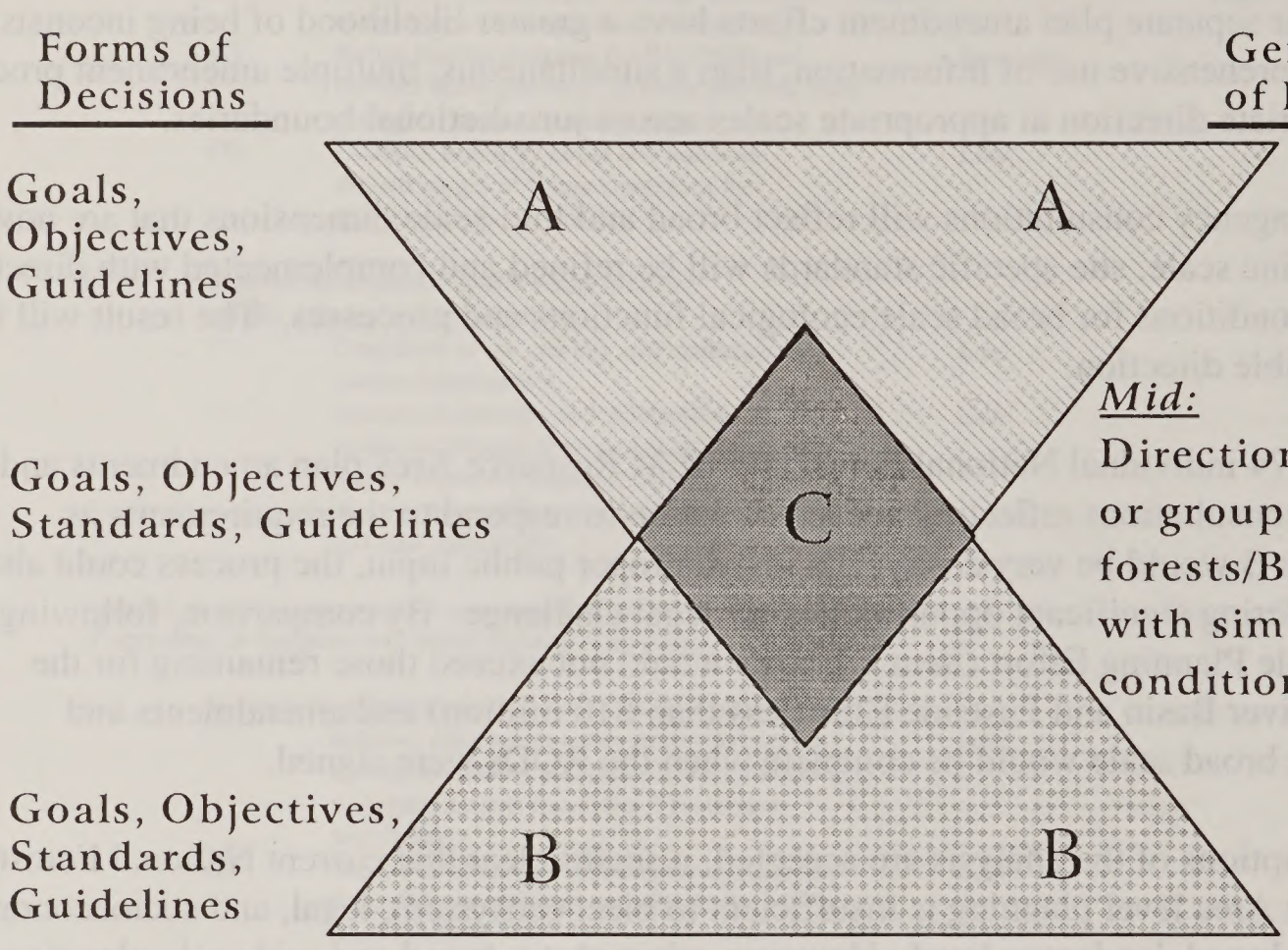
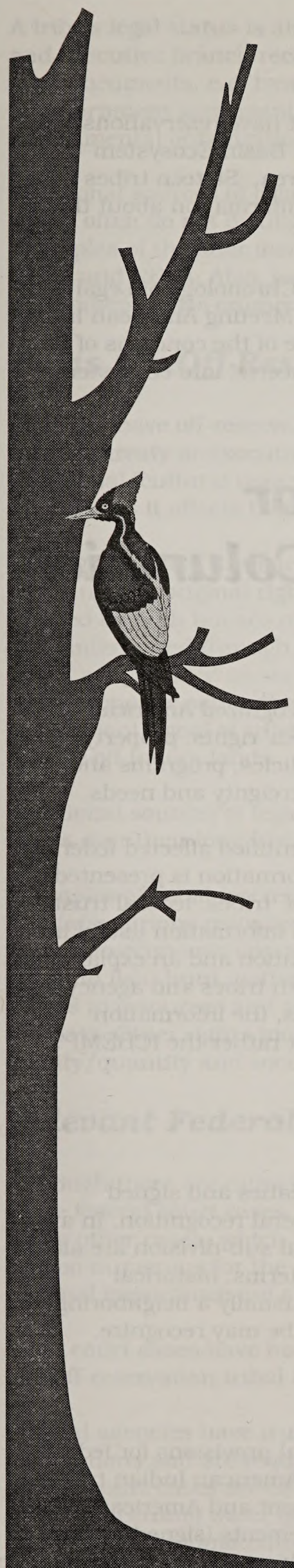


Figure 3.

A complementary relationship is shown between Broad and Mid scale planning, and National Forest and BLM Resource Area level planning processes. Each is necessary but insufficient alone. The Broad and Mid Scale Planning Effort emphasizes *broad* landscape level direction stated primarily as goals, objectives and guidelines to complement current Forest and Resource Area planning, which features primarily project level, *fine* scale standards. A, B, and C together, represent the necessary and sufficient integrated planning condition.

**After reconciliation of A & B - Future amendment of plans may be initiated by project, or on a unit by unit basis.



Appendix C
American Indian Background Information

(Comparable to Eastside Appendix 1-2)

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Introduction

This appendix contains information about the American Indian Tribes that have reservations, ceded lands, or areas of interest within or bordering the Interior Columbia Basin Ecosystem Management Project (ICBEMP), Upper Columbia River Basin EIS project area. Sixteen tribes have worked closely with the Upper Columbia River Basin EIS Team providing information about the tribes and their concerns.

This appendix is presented in four sections: General Information Sheets, Chronology of Legal Status of American Indian Tribes, Evaluating Habitat, Harvestability, and Meeting American Indian Needs, and Ethno-habitats. These four sections will give an overall picture of the concerns of the American Indians and how the ICBEMP is striving to incorporate their concerns into ecosystem management of the project area.

General Information Sheets for Affected Tribes in the Upper Columbia River Basin

The United States Government has a unique relationship with federally recognized American Indian tribes. As federal agencies undertake activities that may affect tribes' rights, property interests or trust resources, care should be taken to implement agency policies, programs and projects in a knowledgeable and sensitive manner respectful of tribes' sovereignty and needs.

The attached general information sheets briefly describe each of the 16 identified affected federally recognized tribes of the Upper Columbia River Basin EIS project area. Information is presented that may be helpful to agency managers in developing an understanding of tribes, federal trust responsibilities, and their organizational structures and a tool to maintain information useful in agency-tribe relationships. This introduction provides background information and an explanation for each subsection in the general information sheets. **NOTE:** Though both tribes and agency legal council were provided opportunities to review these EIS appendix materials, the information presented does not represent either tribal or federal government views, but rather the ICBEMP's best understanding of affected tribes.

Tribes and Bands

The names of Tribes and Bands in this section were taken from ratified treaties and signed executive order documents, which formed the basis for a tribe's formal federal recognition. In a few instances, additional names preferred by a tribe to identify a band, or tribal sub-division are also noted. Many of the names in this section are anglicized versions of native terms, historical creations, or an historic version of a another band's name for the group - usually a neighboring band/tribe. There are other native names and member bands, which a tribe may recognize.

Basis for Legal Status

The basis of a tribe's legal status rests within context of U.S. Constitutional provisions for federal government's powers for treaty making with other sovereign nations, and American Indian tribes inherent sovereignty. The treaty making period between the U.S. Government and American Indian tribes ended in 1871. The federal government thereafter relied upon Agreements (signed by both houses) to legally acquire Indian lands, allow tribes to cede lands, establish reservations, provide federal recognition of tribes and remove Indian peoples to reservations or rancherias.

A tribe's legal status is also derived through Agreements with the U.S. government; congressional and executive branch recognition of the tribe; and federal court interpretations of Indian law and legal documents, e.g. treaties, executive orders, agreements, federal statutes and other government to government agreements. Tribes also have constitutions and by-laws, which formalize their governmental organization and state their relationship with the US government.

Additional sources of legal recognition may be found in federal statutes and congressional Acts, which often do not distinguish between federally and non-federally recognized tribes and bands. Examples of the later include AIRFA, Executive Order on Environmental Justice, NAGPRA, NEPA, NHPA and RFRA. Also, some States have special agreement documents and established government to government relations recognizing a tribe(s)/band, and their interests and needs.

Basis for Off-Reservation Interests/Rights

All tribes have off-reservation interests in public lands and many retain pre-existing rights reserved through treaty or executive order language. Tribal interests in federal lands may be related to traditional/cultural uses; water-land well being, or the socio-economic needs of tribes. These interests as it affects both on and off-reservation tribal rights, interests, trust resources.

The legal basis of these tribal interests and rights are founded in the inherent sovereignty of tribes; continuing aboriginal rights; pre-existing rights reserved in treaties, executive orders; agreements (passed by both houses of the federal government); and federal statues. Some of these in turn have been interpreted through federal court decisions. Where appropriate, examples of a tribe's reserved rights are provided as stated in their treaty or executive order. Congressional direction for tribal socio-economic self-sufficiency and socio well-being on their reservations, and the federal government's goal of tribal self-determination provide further basis for tribal interests and rights that lie off Indian lands.

Additional sources of legal rights may be found in special agreements and recognition provided by states over their long history of relationships with tribes.

Examples of tribal interests in federal agency lands includes: traditional cultural practices, ethno-habitats; various resources; ecosystem health; communally valued sacred and legendary places; and socio-economic opportunities such as livestock grazing. Tribal rights include treaty reserved rights to fish, hunt, gather, trap, and graze livestock and implied rights of water quality/quantity, access to resources and an environmental right including available healthy and sustainable habitats. Other rights include protection of reservation property, trust resources, air quality, water quality/quantity and social well being

Relevant Federal Court Decisions

Although there are numerous federal court decisions involving tribal interests and rights, only those federal court cases where a tribe was a named part to the case are listed in this section. The many other cases, which may have direct or indirect bearing on a given tribe are not listed as they are too numerous for the allotted space. However, an example set of federal court cases that have regional importance are attached to this introduction sheet.

State court cases have been noted where they have not been taken to a federal court to address a like off-reservation tribal interest or right.

Federal agencies have trust obligations to address effects to tribal interest, rights and property on reservations and are required to disclose known effects through the NEPA process. Some standard federal court cases are cited that discussed federal agency trust responsibilities and obligations to tribes concerning water quality/quantity, air quality, or property of Indian reservations as well as social, economic and cultural interests/rights.

Land Base

Pre-treaty land base figures are based on acreage of the homelands of tribes and/or lands ceded by tribes to the US government as provided either by tribes or available literature. Reservations have invariably experienced changes in their size since they were first established so the original reservation acreage, a sketch of some causes of size changes and the current reservation acreage is provided.

Trust land refers to tribal land held in trust for the tribe by the federal government, usually through the Department of Interior's BIA. Fee, or fee simple land refers to land within reservation boundaries not federally owned, but owned by the tribe, or individuals (tribal or non-tribal members). Allotted land, allotted to tribal members through the 1897 Indian Allotment Act until the Indian 1934 Re-organization Act, may be individually owned or land held in trust located either within or outside a reservation. The ownership status of Indian allotments and fee lands are usually not affected when reservations have been abolished by the US government. Indian country refers to all land within an Indian reservation except for non-Indian communities. Trust lands, restricted Indian allotments and federally/tribal dependant Indian communities outside a reservation are also considered Indian country.

Tribal Headquarters

Tribal headquarters are typically both the seat of tribal governments and the location of tribal administration. BIA field offices have often been located in or nearby tribal headquarters. Most tribal government offices in more than one buildings, some in building complexes and for large tribal organizations they may be spread across reservations and/or in more than one community. However, most federal agency contacts will be directed to a tribe's primary government office - tribal headquarters. Though tribal office's are typically open weekdays, it is generally easiest to contact tribal staff Monday through Thursday.

Tribal Population

Estimates of tribal populations from the mid-1800s are typically imprecise owing to the nature of how population numbers were compiled for peoples that actively travelled, and census takers' imperfect understanding of band organizations. More recent population figures are based on tribal enrollment numbers that include both reservation and off-reservation residents.

Cultural Affiliation

Each federally recognized tribe has member bands that anthropologists have assigned to one of five Cultural Areas encompassed by the ICBEMP project area. These Culture Areas include the Californian, northern Great Basin, and Plateau. The Blackfeet Tribe is culturally affiliated with the Plains Culture Area. The persistence of fundamental aspects of tribal cultures are typically strongly influenced by both the culture history of a tribe(s) and the broad cultural patterns of these Culture Areas.

Religions

Most tribes continue to practice their communally shared traditional religious and spiritual belief systems, religions that are blend of traditional and Christian religious systems, and Christianity. Native religious systems and spiritual/healing practices originating from areas outside of the ICBEMP project area are also present and respected by tribes.

Languages

All affected tribes speak English as their primary language. However, native languages and dialects are still spoken and many tribes have or are currently developing native language programs to

ensure native language survival and use. Some tribes continue to employ interpreters to facilitate communications in tribal business meetings.

Governance

This section identifies what sort of tribal organization and the legal basis for its legal structure. For example, whether a tribe opted for the provisions of the Indian Reorganization Act following its passage is noted. Also, if a tribe has opted for a self-governance form of organization, or varying forms of self-determination. The later typically implies one of three trends: 1) Integration of BIA staff, 2) Decreased reliance on BIA support, or 3) Continuance of an existing BIA role in tribal governance. A brief description of tribal government structure is identified including their kind of governing body. The tribe's constitution and By-laws, tribal ordinances and codes, and tribal plans are referenced as appropriate. Operative tribal ordinances and resolutions have historically been subject to Secretary of Interior review and approval.

Pre-Treaty Economy

Historically area tribes and bands were economically inter-dependant and were sustained by subsistence economies that were often been described in legal documents in terms of primary activities, i.e. fishing, gathering, hunting, trapping and animal husbandry. Early historic Indian economies were inter-related with the social, political and religious components of their cultures. These economies were also influenced by non-traditional material goods, (guns, kitchen ware etc), and economic practices (agriculture, fur trading industry).

Tribal Enterprises

Tribal owned and/or operated enterprises provide socio-economic benefits to tribal membership, tribal interests and often support to tribal government infrastructure. These enterprises are varied and often reflect tribal values and interests. Many tribal businesses are dependant on the opportunities of their locations, resources, and inter-relationships with States, non-tribal communities and tourism.

Most are not directly dependant on traditional non-Indian uses of federal lands such as timber harvest, recreation and livestock grazing. However, some tribes like the Northern Paiute tribes are increasingly looking toward livestock grazing of federal lands as a means to support tribal socio-economic well being and economic diversification. Indirect effects of federal land management on tribal enterprises may involve tribal commercial fishing, fisheries, reservation timber industries and tourism.

Tribal Private Sector

Tribal member owned enterprises often range in their variety and are typically less dependant on federal land activities than tribal enterprises. Exceptions are in the areas of commercial and subsistence fishing, gathering and hunting and grazing.

Education Institutions

Many tribes have or are developing tribal educational systems ranging from pre-schools to colleges, and work with neighboring non-Indian educational institutions and more distant universities where Indian youth attend. In addition to standard forms of education, some tribes have native language, cultural, and art institutions or programs. Many tribes have educational materials describing their cultural, history, tribal rights/interests and/or current activities, which may be made available to federal managers and the public.

Museum

Tribal museums, cultural institutes/centers, and cultural interpretative facilities are increasingly being established on or near tribal lands. These are Native American cultural facilities/centers, which provide tribal cultural perspectives and educational opportunities for both tribal members and the public. Some tribes such as the Yakama Indian Nation have sophisticated archival facilities.

Tribal Newspaper

Of the 22 affected ICBEMP tribes, 15 tribes carry a regularly distributed tribal newspaper, or newsletter available to all interested subscribers. A few papers are produced at no cost to subscribers. These papers provide tribal news, media access, local and regional current affairs/ events, Indian country issues, and special interest items. Information on federal and State agencies' actions, activities and meetings are often reported.

Tribal Department/Programs

Tribal programs with off-reservation involvement are listed to help identify the range of tribal interests in resources and land as well as tribal program activities and capabilities. All but the smallest tribal organizations have tribal departments and programs, which are staffed with technical expertise from a wide range of health, social, natural resource and administrative disciplines. These may or may not work closely with counterpart BIA office staff depending on tribal government organizational decisions. Those tribes that have chosen a form of self-governance have taken over most past BIA field office departments and roles. Tribes like the Colville have chosen to co-operatively mix responsibilities between BIA and tribal staff. Still other tribes are currently reviewing how they would prefer to work with local BIA offices.

Tribal Fisheries (Ethno-habitats)

Most affected tribes place an importance on protection and restoration of their socially and traditionally significant habitat places. Primary aquatic habitats for tribal fishing are best known and reported here for each tribe. All culturally significant fish bearing capable streams, rivers and lakes found within a tribe's area of interest (aboriginal homelands, ceded lands included) should be considered probable locations of a tribe's fisheries and/or fishery interests. This includes, legally recognized tribal usual and accustomed fishing grounds and stations on and off-reservations for those tribes with Steven's Treaties.

This section emphasizes tribal fisheries with continuing social, economic and/or cultural significance to tribes. However, tribal hunting and gathering areas/ethno-habitats, though less well known, are mentioned for some tribes where well recognized examples exist.

Subsistence in subsistence areas/ranges refer to more than foods for physical nutrition, but both lands and resources important for socio-cultural sustenance and maintenance of tribal community well being.

Tribal Contact

The ICBEMP's primary tribal contact(s), usually an appointed federal agency liaison, or available leadership from smaller tribal organizations, are listed along with their phone and Fax numbers. Though agency-tribal relations may lean on such liaison contacts, they should not be considered the sole source for technical or policy information and can not be used for purposes of project consultation unless the tribal government agrees to such an arrangement.

Agency Contact

The ICBEMP BIA contact, usually the local BIA office superintendent, and their address, phone number, and Fax number is provided..

Significant Events and Dates

Socio-cultural: Each tribe and associated communities have social and cultural activities held annually as well as community and extended family events. The later, such as weddings, funerals, naming, and give-a-ways, may occur at any time of the year. Taken together these activities help provide an understanding of tribal social life and values. Both types of tribal activities could affect meeting schedules in addition to tribal business schedules depending on employee roles in organizing or participation.

Government: Each tribe has its own electoral system or variation of a type found among other tribes. The times of tribal government elections for tribal and general council positions and how they are performed differ by tribe, owing to differences between tribal constitutions and/or traditional laws. For example some tribes elect their "council" as a whole, while others in parts over a period of years. Tribal elections may occur annually, or periodically every certain number of years. Elections may be by ballot or through a traditional open voting method. Tribal council meetings may be open to tribal membership on a selective basis or frequent basis. How often a tribal or general council meets to conduct business also varies by tribe. Understanding how a tribe generally schedules its time for tribal business may help provide a logistical understanding to facilitate agency-tribal consultation, identify when changes might occur in tribal governing structures and develop a fuller understanding of a tribal government.

Tribal Governing Bodies

The governing body of a tribe may have one of the following titles: Tribal Council, Business Council, Executive Committee, or Board of Trustees. A tribe's governing body ("Councils" are elected from the general council membership, which consist of enrolled tribal members 18 years of age or older. These "councils" may be elected by reservation districts, or in other tribes by members at large. A typical tribal governing body will have selected officials (sometimes elected by "Council" vote) that function as a Chair, Vice-Chair; Secretary, Treasurer; and in some cases as an assistant secretary and sergeant at arms. A chairman or these selected officials sometimes serve to handle specific "council" decisions, although their roles are often specific to collective "Council" functions.

Each tribe has a somewhat different tribal government structure dependant on its legal and organization history. The terms and available positions elected officials hold vary by tribe in both their "tribal council" and general council seats and "committees" membership. All tribes have the first two categories of governmental groups, however, not all function with "committees". How tribal governments are organized are usually described in their constitution and by-law documents. The Yakama Nation is an exception in that it never adopted a constitutional from of government preferring to operate under traditional laws and through ordinances, and general or tribal council resolutions.

Most tribal governments affected by the ICBEMP operate with either a Tribal Council (12 tribes), or a Business Council (7 tribes). However, the Confederated Tribes of the Umatilla Reservation has a Board of Trustees, and the Klamath Tribes' and Nez Perce Nation's have Executive Committees.

General Council

Most tribes have a general council, which is comprised of all enrolled members. Typically only members 18 years of age or older are entitled to voting rights and certain other privileges of tribal citizenship. General councils typically have elected officials to address tribal business concerns

including a Chair; Vice-Chair; Secretary; some tribes also have one or more Interpreters. These positions may be filled by the same officials as on the tribal council in some tribes. The relationship between the General Councils and Tribal/Business type "Councils" is variable, although in most tribes the General Council retains authority to restrict, or amend "Tribal Council" actions and decisions. Certain tribal business issues may be required to be brought before the general council for review and direction prior to a tribal government decision. General Council meetings may be held through the year to address tribal business at regularly scheduled times or through special meetings. General councils having the authority to elect tribal council members may also choose to express direction to a "Council" through an electorial avenue either at regular or early elections.

For those tribes that do not have a general council, tribal membership participate as a rules in the regular Tribal/ Business Council meetings. Examples of tribes in this category include the following: Coeur d'ALene Tribe, Salish and Kootenia Tribes of the Flathead Reservation; Shoshone-Paiute Tribes of the Duck Valley Reservation; Pit River Tribe; and the Quarts Valley Indian Community of the Quartz Valley Reservation.

Committees, Commissions, and Boards

Tribes typically develop and implement policies through the use of a variety of committees, commissions Boards and/or Task Forces. Those listed in this section of the general information sheet provide both an indication of the breadth of issues tribes routinely address, and those that federal land managing agencies may necessarily work with directly. Each tribe may use these organizational groups in different ways and empower them with different kinds of responsibilities and degrees of authority.

Agencies need to become aware to what degree these groups can speak for tribal rights and interests and what their relationship is with both tribal "councils" and departments/programs. Relationships with these tribal groups could become an integral way an agency unit and a tribe decides to conduct informal dialogue, but it can not be mistaken as consultation between an agency and tribe unless the tribal government agrees.

Tribal Area of Interest Map

For those tribes whose tribal headquarters within the ICBEMP area, a map showing its aboriginal area of interest is shown in **context** with ICBEMP and State line boundaries. These interest area indicate the fundamental geographic range of interest for any particular group, i.e. The approximate sum of such interest areas a tribal government represents for its member bands and people.

Individual tribal governments express their interest and concerns for tribal traditional uses, landscapes and resources, and needs of its communities within in the context of their own area of interest. A tribe's homeland is typically located near the center of its interest area and is where primary tribal use of resources and land occurs. Shared resource use areas (cross-utilization areas) are usually near interest areas' peripheries and contribute to why tribal interest areas often overlap one another.

The boundaries of interest areas are necessarily vague and can only be approximated to encompass expansive areas of tribal interests and influences. **Tribal interests areas are not expressly or legal defined, but open to ongoing interpretation and discussion on a project-by-project basis.** Those maps displayed in the tribal appendix represent areas used in the ICBEMP science teams' assessment and do not reflect corrections provided by either the Coeur d'Alene or Kootenai of Idaho tribes.

Interest areas have sometimes called a tribe's aboriginal territory, subsistence range, traditional use area, zone of influence. The term usual and accustomed area by contrast refers to Steven's treaty language rights and interests, which are themselves smaller in area than Interest Areas, but may help define the spatial extend of a tribes Interest Area.

Tribal Ceded, Aboriginal Lands, or Court of Claims Maps

For those tribes with treaties either those aboriginal territories ceded to the US governement, or the aboriginal territories themselves are shown on maps based upon the legal descriptions provided in treaty language, (Portland Area Jurisdiction, Dept. of Interior, Bureau of Indian Affairs, Indian Treaty Boundaries Map, 1986.) Only ceded and aboriginal lands located within the boundaries of the ICBEMP are shown on the General Information Sheet maps. The Shoshone tribe as found on the Fort Hall, Northwest band Shoshone and Wind River reservations has aboriginal territory, which extends outside the project's boundary given the Treaty with the Eastern Band Shoshoni and Bannock, 1868.

Ceded boundaries and reservation boundaries are precisely defined in United States legal documents. Two types of negotiated land areas are recognized: 1) Ceded land area, which pertain only to those tribes that ceded lands to the US government by treaty or agreement; and 2) Exclusive use land areas, which boundaries were established through a modern land claims process. Ceded territory boundaries were typically established by U.S. treaty negotiators, often prior to the actual treaty council meetings. Exclusive use area boundaries are based on arguments provided to the Federal Claims Commission, which tended to focus on "exclusive use" core areas, and exclude the full area of a tribe's subsistence range.

These two types of areas are normally geographically large, but usually much smaller than interest areas. Both are constructs developed as a result of U.S. Indian policy (treaties and the Indian Claims Commission Act) and are legally meaningful largely to address tribes' right and title to land. Ceded land may have importance where legal questions pertain, but as a spatial unit may lack traditional significance to Indian peoples. For example, as Indian case law has shown, usual and accustomed fishing sites and other traditional use locations are defined within interest areas, not ceded territories or land claims boundaries.

Ceded boundaries, where they exist, tend to establish a modern-day version of exclusive use areas, serving to identify supremacy of a tribe's interests over other tribes in certain areas. They also form convenient administrative boundaries for tribal land use planning efforts and, in some cases, are viewed by tribal staff as defining the tribe's interest area.

Federal Court Cases with Applications for Multiple Tribes

This is a summary of federal court cases relevant to the off-reservation interest and rights of affected tribes not provided in the tribal general information sheets, (see section on Relevant Federal Court Decisions). These Federal cases were selected on the basis of their relevance to land, water, resources, cultural uses and federal agency land management with an emphasis on off-reservation case implications. This listing is intended to be an initial reference source for a wide range of tribal rights, interests and issues as interpreted in the federal court system. (See tribal Chronology for other legal status references.)

Affected ICBEMP Tribes Named as a Party to Federal Court Case

Supreme Court Decisions

United States v. Winans, 198 U.S. 371 (1905)
Seufert Bros. Co. v. United States, 249 U.S. 194 (1919)
Confederated Tribes of the Yakima Indian Nation, 249 U.S. 194 (1919)
Shoshone Tribes v. United States, 299 U.S. 476 (1937
United States v. Klamath & Moadoc Tribes, 304 US 119 (1938)
United States v. Shoshone Tribe, 304 U.S. 111 (1938)
Klamath v. Moadoc Tribes, 304 U.S. 119 (1938)
Tulee v. State of Washington, 315 U.S. 680 (1942)
Northwestern Band of Shoshone Indians v. United States, 325 U.S. 849 (1945), recall and amend mandate denied.
Antoine v. Washington, 420 U.S. 194 (1975)
Wash. v. Wash. State Comm. Passenger Fishing Vessel Ass'n, 443 U.S. 658 (1979).
Oregon Department of Fish and Wildlife v. Klamath Tribes, 473 U.S. 753 (1985)

Federal Court Seconds

Whitefoot v. United States 293 F.2d. 658 (Ct. Cl. 1961), cert. denied, 369 U.S. 818 (1962)
Maison v. Confederated Tribes of Umatilla Reservation, 314 F.2d 169 (9th Cir.), Cert. denied, 375 U.S. 829 (1963)
Confederated Tribes of Warm Springs Reservation v. United States, 177 Ct. Cl. 184 (1966)
Confederated Salish & Kootenai Tribes v. United States, 181 Ct. Cl. 739 (1967)
Settler v. Yakima Tribal Court, 419 F.2d 486 (9th Cir. 1969), cert. denied, 398 U.S. 903 (1970)
Confederated Tribes of the Umatilla Indian Reservation v. Calloway, Civil No. 72-211, (Dist. of Oregon 1973)
Settler v. Lameer, 507 F.2d 231, (9th Cir. 1974).
United States v. Oregon, 529 F.2d 570 (9th Cir. 1976).
Confederated Bands and Tribes of the Yakima Indian Nation v. State of Wash., 550 F.2d 443 (9th Cir. 1977)
Kimball v. Callahan, 493 F.2d 564 (9th Cir.), cert denied, 419 U.S. 1019 (1974)
United States v. State of Washington, 641 F.2d 1389 (9th Cir. 1981)
United States v. Oregon, 718 F.2d 299 (9th Cir. 1983)
United States v. Adair, 723 F.2d 1394 (9th Cir. 1984)
United States v. State of Washington, 759 F.2d 1353 (9th cir.1985).
Kittitas Reclamation District v. Sunnyside Valley Irrigation Dist., 763 F.2d 1032 (9th Cir. 1985)
United States v. Oregon, 913 F.2d 576 (9th Cir. 1990)
United States v. Oregon, Civ. No. 68-513-MA (9th Cir. 1994)

Federal Court Supplements

Seurfert v. Olney, 193 F.Supp. 200 (E.D. Wash. 1911)
United States v. Seufert Bros. Co., 233 F. Supp 579 (D.Or. 1916), aff'd sub nom
United States v. Cutler, 37 F.Supp 725 (Dist. of Idaho 1941)
Sohappy v. Smith, 302 F.Supp. 899 (Dist. of Oregon 1969)
Confederated Salish & Kootenai Tribes v. Namen, 380 F. Supp. 452 (D. Montana 1974), aff'd. 534 F.2d. 1376 (9th Cir.), cert deneid, 429 U.S. 929 (1976)
Colville Confederated Tribes v. Walton, 460 F.Supp 1320 (E.D. Wash. 1978), aff'd F.2d ((th Cir. 1980)
United States v. Washington, 506 F.Supp. 187, (W.D Wash. 1980), (Phase II of Bolt Decision) Remanded to the 9th Cir. Court and vacated
Confederated Tribes of the Umatilla Indian Res. v. Alexander, 440 F.Supp.553 (Dist. of Oregon 1977).

Sohappy v. Hodel, Civ. No. 86-715 (W.D. Oregon 1986)
United States v. Oregon, 666 F.Supp. 1461 (1987), aff'd, 913 F.2d 576 (Dist. of Oregon 1990)
United States v. Oregon, 699 F.Supp. 1456 (1988), aff'd, 913 F.2d 576 (Dist. of Oregon 1990)
Nez Perce Tribe v. Idaho Power Co., 847 F.Supp. 791 (Dist. of Idaho1994), appeal docketed, No. 94-36237 (9th Cir.)
United States v. Washington, (W.D. Wash.1994), Civ. No. 9213, Sub-proceeding 89-3.

Federal Indian Claims Court

Confederated Tribes of Colville Reservation v. United States, 25 Indian Cl. Commission 99 (1971)
Confederated Tribes of Colville Reservation v. United States, 43 Indian Cl. Commission 505 (1978)

State Cases of Interest

State v. Meninook, 115 Wash. 528 (1921)
State v. Arthur, 74 Idaho 251 P.2d. 135 (1953), cert. denied, 347 U.S. 937 (1954)
State v. Moses, 70 Wash. 2d 282, 422 P2d 775, cert denied, 389 U.S. 428 (1967)
State v. Coffee, 97 Idaho 905, 556 P. 2d. 1185 (1976)

Other Court Cases Relevant to Affected ICBEMP Tribes, Federal Agency-Tribal Relations, and Tribal Issues

Supreme Court

Johnson v. M'Intosh, 21 U.S. (8 Wheat.) 543 (1823)
The Cherokee Nation v. State of Georgia, 30 U.S. (5 pet.) 1 (1831)
Worchester v. State of Georgia, 31 U.S. 483 (1832)
Mitchel v. United States, 34 U.S. (9 Pet.) 711 (1835)
Fellows v. Blacksmith, 60 U.S. (19 How.) 366 (1856)
United States v. Kagama, 118 U.S. 375 (1886)
Cherokee Nation v. Southern Kansas Railway Co., 135 U.S. 641 (1890)
United States v. Choctaw Nation, 179 U.S. 494 (189?)
Cherokee Nation v. Hitchcock, 187 U.S. 294 (1902)
Lone Wolf v. Hitchcock, 187 U.S. 553 (1903)
Winters v. United States, 207 U.S. 564 (1908)
New York ex rel Kennedy v. Becker, 241 U.S. 556 (1916)
Mason v. United States, 260 U.S. 545 (1923)
Chippewa Indians of Minnesota v. United States, 301 U.S. ?? (1937)
United States ex rel. Hualpai Indians v. Santa Fe Pacific R.R., 314 U.S. 339 (1941)
Seminole Nation v. U.S., 316 U.S. 310 (1942)
Sioux Tribe v. United States, 316 U.S. 317 (1942)
United States v. Alcea of Tillamooks, 329 U.S. 40 (1946)
Hynes v. Grimes Packing Co., 337 U.S. 86 (1948)
Tee-Hit-Ton Indians v. United States, 348 U.S. 272 (1958)
Metlakstla Indians v. Eagon, 369 U.S. 45 (1962)
Organized Village of Kake v. Eagan, 369 U.S. 60 (1962)
Arizona v. California, 373 U.S. 546 (1963)
Oneida Tribe of Indians of Wisconsin v. U.S., Cert. denied 379 U.S. 946 (1964)
Puyallup Tribe v. Dept. of Game of Washington, 391 U.S. 392 (1969)
Menominee Tribe of Indians v. United States, 391 U.S. 404 (1968)
United States v. Mason, 412 U.S. 391 (1973)
Department of Game of Washington v. Puyallup Tribe 414 U.S. 44 (1973)
Morton v. Ruiz, 415 U.S. 199 (1974)

Colorado River Conservation District v. United States, 424 U.S. 800 (1976)
United States v. Wheeler, 435 U.S. 313 (1978)
Strong V. United States, 518 F.2d 556 (Ct. CL.), cert. denied, 423 U.S. 1015 (1975)
Puyallup Tribe v. Dept. of Game of Washington, 433 U.S. 165 (1977)
Oliphant v. Suquamish Indian Tribe, 435 U.S. 191 (1978)
United States v. Wheeler, 435 U.S. 313 (1978)
United States v. Washington, 443 U.S. 658, modified 444 U.S. 816 (1979)
Andrus v. Allard, 444 U.S. 51 (1979)
Crow Tribe of Indians, Montana v. EPA, Certiorari denied 454 U.S. 1081 (1981)
Nevada v. United States, 463 U.S. 110 (1983)
United States v. Mitchell, 463 206 (1983)
Nevada v. Hodel, 470 U.S. 1083 (1985)
Truckee-Carson Irrigation Dist. v. Sec. of the Interior, Cert. denied 472 U.S. 1007 (1985)
United States v. Dion, 476 U.S. 734 (1986)
Makah Indian Tribe v. United States, 501 U.S. 1250 (1991)

Federal Court Seconds

Minnesota v. United States, 125 F.2d 636 (8th Cir. 1942)
United States v. Washington, 520 F.2d 676 (1975), cert denied, 423 U.S. 1086 (9th Cir. 1976)
Joint Tribal Council of Passamaquoddy Tribe v. Morton, 528 F.2d 370 (1st Cir. 1975)
Coast Indian Community v. United States, 550 F.2d 639 (Court of Claims 1977)
United States v. Dann, 572 F.2d 222 (9th Cir. 1978)
Pugent Sound Gillnetters Ass'n v. Washington, aff'd, 573 F.2d 1123 (9th Cir. 1973)
Sac and Fox Tribe v. Licklider, 576 F.2d 145 (8th Cir), cert denied, 439 U.S. 955 (1978)
United States v. Olander, 584 F.2d 876 (9th Cir. 1978)
Navaho Tribe of Indians v. United States, 624 F.2d 981 (Court of Claims 1980)
Nance v. EPA, 645 F.2d 701 (9th Cir. 1981), Cert. denied., 454 U.S. 1081 (9th Cir. 1981)
Blake v. Arnett, 663 F.2d 906 (9th Cir. 1981)
Inupiat Community v. United States, 680 F.2d 122 (Court of Claims 1982)
Lac Court Oreilles Band, etc. v. Voigt, 700 F.2d (7th Cir. 1983)
Carson-Truckee Water Conservancy District v. Clark, 741 F.2d 257 (9th Cir. 1984)
Truckee-Carson Irrigation Dist. v. Sec. Depart. of Interior, 742 F.2d 527 (9th Cir. 1984)
Assiniboine and Sioux Tribes of Fort Peck Indian Reservation v. Board of Oil and Gas, State of Montana, 792 (9th Cir. 1986)
U.S. v. White Mountain Apache Tribe, 784 F.2d 917 (9th Cir. 1986)
Covello Indian Community v. FERC, 895 F.2d 581 (9th Cir. 1990)
Pyramid Lake Paiute Tribe of Indians v. U.S. Depart. of the Navy, 898 F.2d 1401 (9th Cir. 1991)

Federal Court Supplements

United States v. 4,450.72 Acers of Land, 27 F. Supp.167 (D.Minn. 1939), aff'd sub nom.
The Pyramid Lake Paiute Tribe v. Morton 354 F. Supp. 252 (Dist. of Columbia 1973)
United States v. Washington, 384 F.Supp. 312 (W.D. Wash. 1974)
Manchester Band of Pomo Indians v. U.S., 363 F.Supp, 1238 (N.D. Calif. 1973)
United States v. Washington, 384 F.Supp 312 (w.D. Wash. 1974, aff'd, 520 F.2d 676 (9th Cir. 1975)
United States v. State of Minnesota, 466 F.Supp. 1382 (Dist. of Minn. 1979)
United States v. Michigan, 471 F.Supp. 192 (W.D. Mich. 1979), appealed
No Oilport! v. Carter, 520 F.Supp. 683 (W.D. Wash. 1981)
Carson-Truckee Water Conservancy District v. Watt, 549 F.Supp. 704 (Dist. of Nevada 1982)
Hoh Indian Tribe v. Baldridge, 522 F.Supp. 683 (W.D. Wash. 1983)
Carson-Truckee Water Conservancy District v. Watt, 549 F. Supp. 704 (Dist. of Nevada 1982)
Northern Cheyenne Tribe v. Hodel, 12 Indian L. Rep. 3065 (Dist. of Montana 1985)
Lac Courte Oreilles Band of Lake Superior Chippewa Indians v. Wisconsin, 668 F. Supp. 1233 (Dist. of Wisc. 1987)
Idaho Dept. of Fish and Game v. NMFS, 850 F.Supp.886 (Dist. of Idaho 1994)

Blackfeet Tribe of the Blackfeet Indian Reservation of Montana

Tribes and Bands

The Southern Piegean, Bloods, Siksika, Northern Piegean.

Basis for Legal Status

Inherent sovereignty. Treaty with the Blackfeet, October 17, 1855.

Treaty with the Blackfeet 1855, Article 3: *". . . shall be a common hunting-ground for ninety-nine years, where all the nations, tribes and bands of Indians, parties to this treaty, may enjoy equal and uninterrupted privileges of hunting, fishing and gathering fruit, grazing animals, curing meat and dressing robes. They further agree that they will not establish villages, or in any other way exercise exclusive rights within ten miles of the northern line of the common hunting-ground, and that the parties to this treaty may hunt on said northern boundary line and within ten miles thereof."*

Treaty with the Sioux-Brule', Oglala, Miniconjou, Yanktonai, Hunkpapa, Blackfeet, Cuthead, Two Kettle, sans Arcs, and Santee and Arapaho 1868, Article 1: *". . . but yet reserve the right to hunt on any lands north of North Platte, and on the Republican Fork of the Smoky Hill River, so long as the buffalo may range thereon in such numbers as to justify the chase."*

Basis for Off-Reservation Interests/Rights

(inherent sovereignty, aboriginal rights, and socio-economic well-being on their reservation.) *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d 701 (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel*, 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have a trust obligation when their actions may adversely affect the water quality/quantity, air quality, or property of Indian reservations.

Land Base

In 1873 a reservation for the Blackfeet tribe was established: 1.6 million acres in northeast Montana. East to west–Montana/Dakota border to Rocky Mountains and north to south–Canadian border to Missouri and Sun or Medicine Rivers. West boundary: Rocky Mountains; North boundary: Montana and Canadian border.

Tribal Headquarters

Blackfeet Tribal Business Council; Box 850, Browning, MT 59417; Phone: 406-338-7276; Fax: 406-338-7530.

Tribal Population

1992: 14,000 enrollment.

Governance

Blackfeet Tribal Business Council; Earl Old Person, Chairman; Tom Thompson, Vice-Chairman; Gabe Grant, Tribal Secretary; Council members: Marlene Bear Walter; Charles J. Connelly, Gene Dupray, George Kicking Woman, Roger Running Crane, and Ted Williamson.

Museum

Museum of the Plains Indian in Browning, Montana was founded in 1941. Next to the museum is an authentic 1850 Blackfeet encampment called "In the Footsteps of the Blackfeet."

Tribal Newspaper

Glacier Reporter; P.O. Box R, Browning, MT 59417; Phone: 416-338-2090; Fax: 416-338-2410; Published every Thursday.

Tribal Contacts

Blackfeet Tribal Business Council; Box D, Browning, MT 59417; Phone: 406-338-7206; Fax: 406-338-7406.

Jim Kennedy, Natural Resources Administrator; Phone: 406-338-7179.

Charles Connelly, Landboard Chairman; Phone: 406-338-7276.

Jeanne Whiteing, Special Counsel; Phone: 306-444-2549.

Agency Contact

Jerry Dombrovski, District Ranger; Rocky Mountain Ranger District, Choteau, MT 59422; Phone: 406-466-5341; Fax: 406-466-2237. Eric LaPointe, Superintendent Blackfoot Agency, BIA; P.O. Box 880, Browning, MT 59417; Phone: 406-338-7544; Fax: 406-338-7716.

Significant Events and Dates

North American Indian Days, Blackfeet Tribal Fairgrounds, Browning, Montana.

Coeur d'Alene Tribe of the Coeur d'Alene Reservation, Idaho

Tribes and Bands

Coeur d'Alene, Spokane, San Joe (St. Joseph) River, and Coeur d'Alene.

Basis for Legal Status

(inherent sovereignty) In 1867 the Coeur d'Alene Reservation was established for the Coeur d'Alene, Kalispel, Spokane, Sanpoil, and Colville bands. The Coeur d'Alene never moved to that reservation; In 1873 Executive Order established a 592,000 acre reservation for the Coeur d'Alene tribe; In 1887 an agreement to strengthen the commitment of the U.S. Government to secure tribal lands reduced the reservation land base. The Spokane, Kalispel, Colville, and Pend Oreille tribal members agreed to move to the reservation; In 1889 an Executive Order ceded all homeland of the tribe, in addition to the forty percent of reservation agreed to in 1887; In 1894 an agreement removed the town of Harrison, Idaho from the reservation.

Basis for Off-Reservation Interests/Rights

(inherent sovereignty, socio-economic well-being on their reservation) *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel* 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have trust obligations when their actions may adversely affect water quality and quantity, air quality, or property of Indian reservations.

Land Base

Pre-treaty: 4 million acre territory bordered by Clark Fork River on the east in Montana, Clearwater River Territories to the south, Spokane Falls to the west, and Lake Pend Oreille to the north; 1873: Executive Order established 592,000 acre reservation; 1889: Executive Order has Coeur d'Alene cede all land except for reservation; 1894: Agreement changes northern border to exclude the town of Harrison, Idaho; today's reservation: Total of 345,000 acres; Tribal lands: 27,742 acres; Allotted lands: 40,718 acres; Fee lands: 276,540 acres.

Tribal Headquarters

Coeur d'Alene Tribal Headquarters; 850 A Street, P.O. Box 408, Plummer, ID 83851-9704; Phone: 208-686-1800; Fax: 208-686-1182.

Tribal Population

Pre-1855: 3-4000; 1985: 853 on reservation; 1995: 1,300.

Cultural Affiliation

Plateau Cultural Region Religions: Christian denominations.

Languages

English and Interior Salish.

Governance

Constitution approved September 2, 1949 and amended in 1960/61. The Constitution provides for a General Council and seven council members. Council members are elected to three year terms. The council delegates authority for implementation of the Council's legislative actions to the Administrative Director.

Pre-Treaty Economy
Fishing, hunting, farming, cattle, horses, and gathering with local and regional trade.

Tribal Enterprises
Coeur d'Alene Tribal Farm: Jack Miller; Benewah Market, owned and operated by the tribe; Coeur d'Alene Tribal Bingo-Casino located in Worley, Idaho; Tribal Development Center; Benewah Medical Center; Benewah Auto Center.

Tribal Private Sector
Individual farms; Indian smoke shops.

Museum
The Coeur d'Alene Tribe maintains historical archives. A cultural interpretative center is located at Heyburn State Park. The Cataldo Mission Site, Cataldo, Idaho has a small museum and interpretative center.

Tribal Newspaper
Coeur d'Alene Council Fires: Schee-chu-umsh Sqwlp-N' Mut; Phone: 208-686-1800.

Tribal Programs
Personal, Property and Supply; Finance; Planning and Natural Resources; Education and Career Development; TERO. Fisheries Enhancement Program (BPA)

Tribal Fisheries
Coeur d'Alene River including Lake Coeur d'Alene, St Joe River, St Marie River.

Tribal Contact
Chuck Finan, Natural Resources Department Director; Coeur d'Alene Tribal Headquarters; Plummer, ID 98351-9704; Phone: 208-686-1088; Fax: 208-686-1182. Non-policy contacts: Janel McCurdy, Forest Manager; Phone: 208-686-1855.

Agency Contact
Mike Morigeau, Field Representative, Northern Idaho Agency, 850 A Street, P.O. Box 408, Plummer, ID 83851; Phone: 208-686-1887; Fax: 208-686-1903.

Significant Events and Dates
Socio-cultural: August 15th, Feast of the Assumption, Cataldo, Mission; Good Friday and Easter Sunday; 4th Friday in September; National American Indian Day, 4th Friday in October; Water Potato Day.

Tribal Council
Ernest Stensgar, Chairperson; Lawrence S. Aripa, Vice-Chairman; Norma J. Peone, Secretary and Treasurer; Council members: Marjorie E. Zarate, Norman Campbell, Henry J. Sijohn, Albert R. Garrick. Tribal Council meets each Thursday of the week. The general membership meets quarterly with the option to hold special meetings as warranted by tribal issues. The general membership helps to provide direction to the Tribal Council or Tribal matters.

Cultural History Information
The Coeur d'Alene had intermittent contact with fur traders and Hudson Bay people before permanent contact with Euroamericans; this began in 1842 with the establishment of a Catholic Mission near St. Maries, Idaho by Father Pierre DeSmet. References: Connolly, Thomas E., 1990, *A Coeur d'Alene Indian Story* and 1990, *Saga of the Coeur d'Alene Indians;* Boas and Teit, 1985, *Coeur d'Alene, Flathead, and Okanogan Indians.*

Coeur d'Alene Tribe
Map 1.
Area of Interest

Displayed interest area is subject to consultation with tribes.
Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

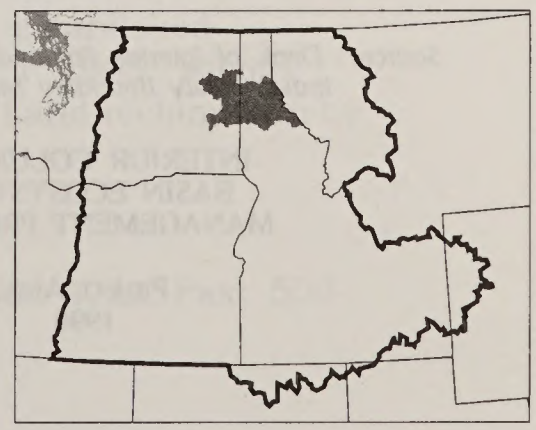
Project Area
1996

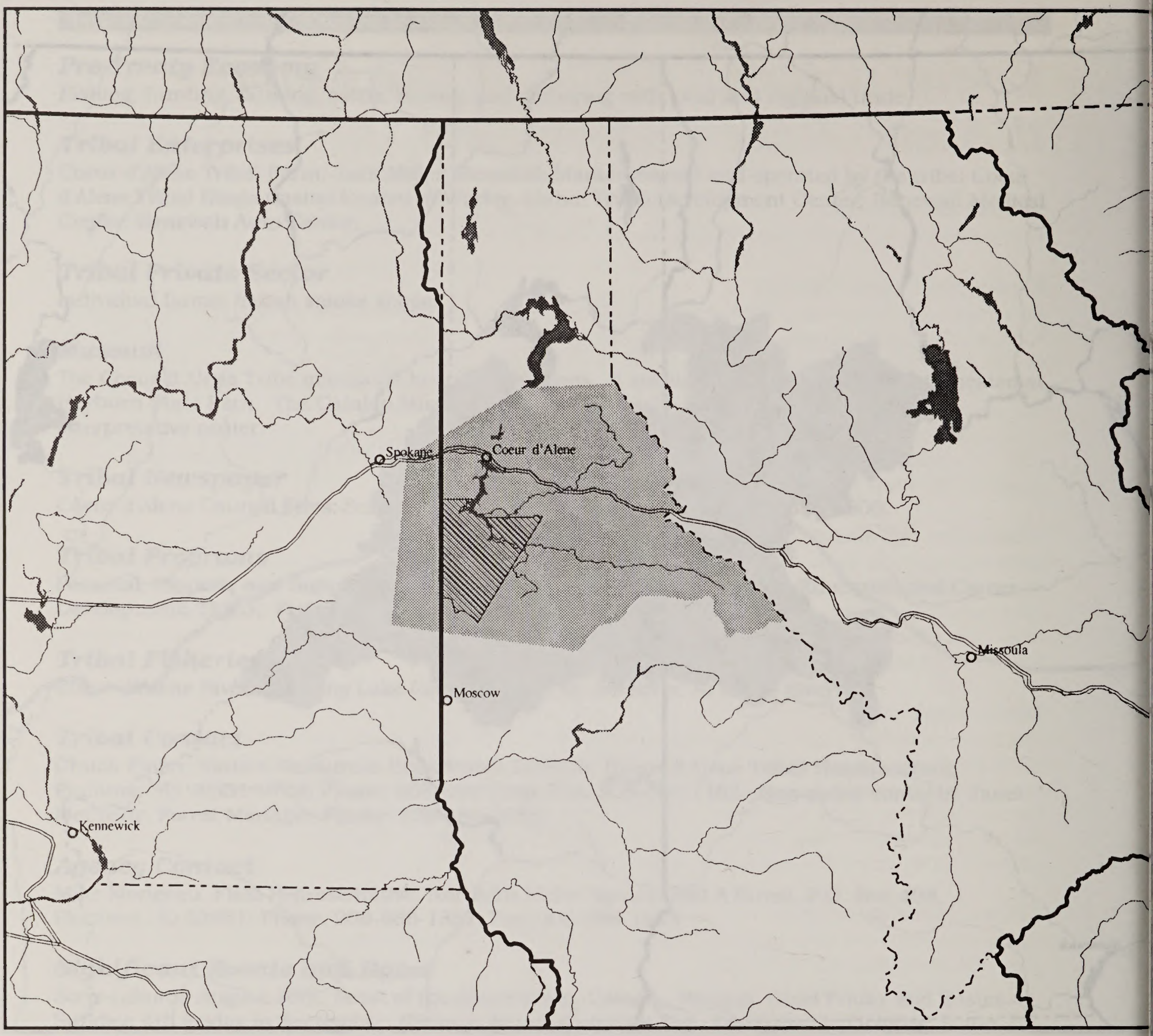
20 0 20 40 miles

20 0 20 40 km

N

- Coeur d'Alene Tribe Area of Interest
- Coeur d'Alene Reservation
- Water
- Major Rivers
- Major Roads
- State Borders
- EIS Area Border





Coeur d'Alene Tribe
Map 2.
Court of Claims

Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

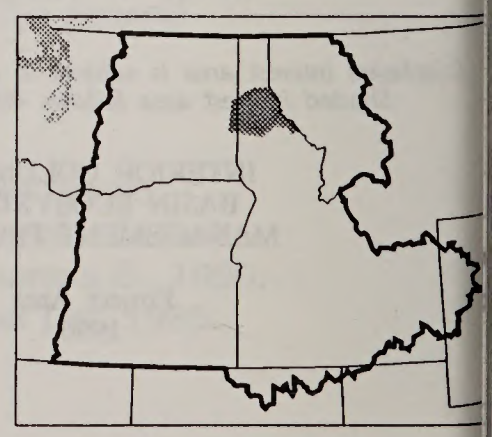
Project Area
1996

20 0 20 40 60 miles

20 0 20 40 60 km

N

- *Coeur d'Alene Tribe Court of Claims*
- *Coeur d'Alene Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



Confederated Tribes of the Colville Indian Reservation, Washington

Tribes and Band

Methow, Sanpoil, Lakes, Colville (Sweelpoo), Kalispel, Spokane, Entiat, Nespelem, Chelan, Columbia (Senkaiuse), Chief Joseph band of the Nez Perce, Wenatchee (Wenatchapum), Southern Okanogan (Sinkaietk), Palouse, Lakes (Senijextee).

Basis for Legal Status

(inherent sovereignty) Nez Perce and Yakama Treaties of June 9th, 1855; Executive Order of April 9, 1872 superseded by Executive Order of July 2, 1872; Executive Orders of March 6, 1879, February 23, 1883, March 6, 1880, May 1, 1886; Agreements of May 9, 1891, July 1, 1892, December 1, 1905, March 22, 1906; Act of June 20, 1940.

Basis for Off-Reservation Interests/Rights

(inherent sovereignty, aboriginal rights, socio-economic well-being on their reservation, and reserved rights.) "Yakama" Treaty of 1855, Article 3: "Right of fishing at all usual and accustomed places in common with citizens of the Territory; and erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land." Agreement of 1891, Article 6: ". . . Indians shall enjoy . . . the right to use all water power and sources belonging to or connected with lands to be so allotted, and the right to hunt and fish in common with all other persons on lands not allotted to said Indians shall not taken away or otherwise abridged."

Relevant Federal Court Decisions

(Colville as party to case) *Confederated Tribes of Colville Reservation v. U.S.*, 25 Indian Cl. Comm'n 99, 108-13 (1971);*Yakima v. U.S.*, 1963–12 Ind. Cl. Com. 362, 1973–Final Judgment; *Antoine v. Washington*, 1974; *Pyramid Lake Paiute Tribe v. Morton* 354 F. Supp. 252 (D.D.C. 1973); *Confederated Tribes of Colville Reservation v. U.S.*, 43 Indian Cl. Comm'n 505 (1978); *Colville Confederated Tribes v. Walton*, 460 F. Supp. 1320 (E.D. Wash. 1978), aff'd F. 2d. (9th Cir. 1980); *Nance v. E.P.A.* 645 F.2d 701 (9th Cir. 1981); and *Northern Cheyenne Tribe v. Hodel* 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have trust obligations when their actions may adversely affect the water quality/quantity, air quality, or property of Indian reservations.

Land Base

Pre-treaty: 2.8 million unallotted acres. Present: 1.4 million acres or 2,100 square miles. April 9, 1872: Reservation established encompassing areas of northeastern modern Washington; July 2, 1872: Reservation area changed to north- central area of modern Washington; April 19, 1879: Columbia/Moses Reservation boundaries established north to the British Columbia border; March 6, 1880: Columbia Reservation expanded west to Lake Chelan; February 23, 1883: Large portions of Columbia Reservation restored to public domain; May 1, 1886: Remaining Columbia Reservation restored to public domain. Indian allotments retained. Members removed to Colville Reservation. Columbia Reservation allotments are retained; May 9, 1891 Agreement: Tribes ceded northern half of Colville Reservation to Canada; July 1, 1892: A portion of re-established reservation of July 2, 1872 vacated and restored to public domain; December 1, 1905: All of diminished reservation's right and title relinquished to U.S.; June 20, 1940: Land reclamation by U.S. for construction of the Grand Coulee Dam.

Tribal Headquarters

Colville Business Council; P.O. Box 150, Nespelem, WA 99155; Phone: 509-634-4711; Fax: 509-634-4116; Business Hours: 7:30am– 4:00pm.

Tribal Population
1995: 7,992 with about 50 percent residing on the reservation.

Cultural Affiliation
Plateau Cultural Region.

Religions
Christian denominations, Traditional beliefs, and Washat (Seven Drums).

Languages
Interior Salsih, Sahaptin, and English.

Governance
The Colville Tribe did not adopt the Indian Reorganization Act of 1934. The Tribe operates under a constitutional form of government with a Business Council since 1938. The tribal constitution has been amended nine times, the first on June 15, 1946 and the last on May 8, 1988. The Colville Tribes are implementing their 1995 Indian self-determination agreement (co-op management agreement) by and between the CTCIR and the BIA, which integrates functions and staff.

Tribal Enterprises
Colville Tribal Enterprises Corp.: Timber and wood products mills; bingo; casino; three grocery stores; Grand Coulee houseboat fleet; power revenues from Grand Coulee Dam.

Tribal Private Sector
Ranching; Arts and Crafts; Retail Trade; and other commercial businesses.

Museum
Colville Tribe Museum, Grand Coulee, WA. Phone: 509-634-8863.

Newspaper
Tribal Tribune; P.O. Box 150, Nespelem, WA 99155; Sheila Whitlaw; Phone: 509-634-4711, ext. 835; Fax: 509-634-4116.

Tribal Programs (off-reservation involvement)
Fisheries; Archeology and History Department.

Tribal Fisheries
Columbia, Entiat, Okanogan, Lower Kettle, Nespelem, Sanpoil, Wenatchee, Chelan and Methow Rivers; Lake Chelan; Crab and Entiat Creeks; Rock Island, Cabinet, and Gualquil rapids.

Tribal Contact
Tony Atkins, Natural Resource Administrator; Phone: 509-634-8882; Fax: 509-634-8685.

Joe Peone, Acting Director Fish and Game; Phone: 509-634-8845; Fax: 509-634-8592.

Debbie Rosenblaum, Tribal Administration (tribal organizational information).

Agency Contact
William E. (Gene) Nicholson, Superintendent, Colville Indian Agency, BIA; P.O. Box 111, Nespelam, WA 99155; Phone: 509-634-4901.

Significant Events and Dates

Socio-cultural: Pow Wow Celebrations, other significant social gatherings, and unanticipated events, such as funerals and illnesses, could impact tribal meeting schedules.

Government: The Business Council is elected from four reservation districts. Two groups of seven Council members are elected to four year terms in staggered biennial elections. Following elections in mid-May, a Chairman and Vice-Chairman are chosen by the Council's Executive Committee and a Secretary and Treasurer are selected by the Business Council. General Council elections are held in late June. The General Council meets at least once a year and provides direction to the Business Council; however, they are expected to start meeting semi-annually. Reservation district Council members may meet as warranted by tribal issues.

Colville Business Council

Term from July 1995 to July 1997. Donald "D.R." Michel, Inchelium District Position 1; Wilfred "Deb" Louie, Nespelem District Position 1; Frances Charette, Inchelium District Position 2; Gloria Picard, Secretary, Nespelem District Position 2 ; Joe Pakootas, Vice-Chair, Inchelium District Position 3; Harvey Moses Jr., Nespelem District Position 3; Richard Swan, Inchelium District Position 4; Eddie Palmanteer Jr., Omak District Position 1; Jeanne Jerred, Keller District Position 1; Margie C. Hutchinson, Omak District Position 2; Walt Arnold, Keller District Position 2; Dale Kohler, Omak District Position 3; Louella Anderson, Omak District Position 4; Colville Business Council meets together the 1st and 3rd Thursday of each month.

Contact: Mathew Dick Jr., Chairman; P.O. Box 150, Nespelem, WA 99155; Phone: 509-634-4711.

Business Council Committees

Management and Budget; Tribal Government; Resource Management; Public Safety; Human Services; Education and Employment; Community Development. Business Council Committee meeting times: Colville Business Council, Mathew Dick Jr., 1st and 3rd Thursday of month; Management and Budget, Gloria Picard, 1st and 3rd Monday of month; Tribal Government, Margie Hutchinson, 2nd and 4th Monday of month; Resource Management, Deb Louie, 1st and 3rd Tuesday of month; Public Safety, Walt Arnold, 2nd and 4th Tuesday of month; Human Services, Louella Anderson, 1st and 3rd Wednesday of month; Education and Employment, Harvey Moses Jr., 2nd and 4th Wednesday of month; Community Development, D.R. Michel, 2nd and 4th Thursday of month.

Community and Economic Planning

Ted J. Bessette; Phone: 509-634-4711. From spring through fall, Pow Wow Celebrations and other significant social gatherings occur and are well attended by the tribe. These events usually occur on weekends, often beginning Fridays. Unanticipated events that may obligate extended-family involvement, such as funerals, weddings and illnesses, could impact tribal meetings.

Seattle
Spokane
Coeur d'Alene
Wenatchee
Yakima
Kennewick
Portland
The Dalles

Confederated Tribes of the Colville Reservation
Map 1.
Area of Interest

Displayed interest area is subject to consultation with tribes.
Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

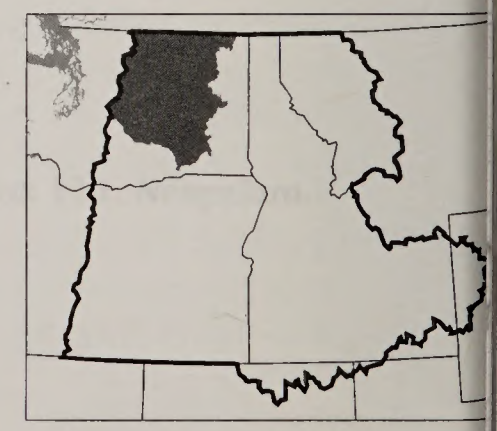
Project Area
1996

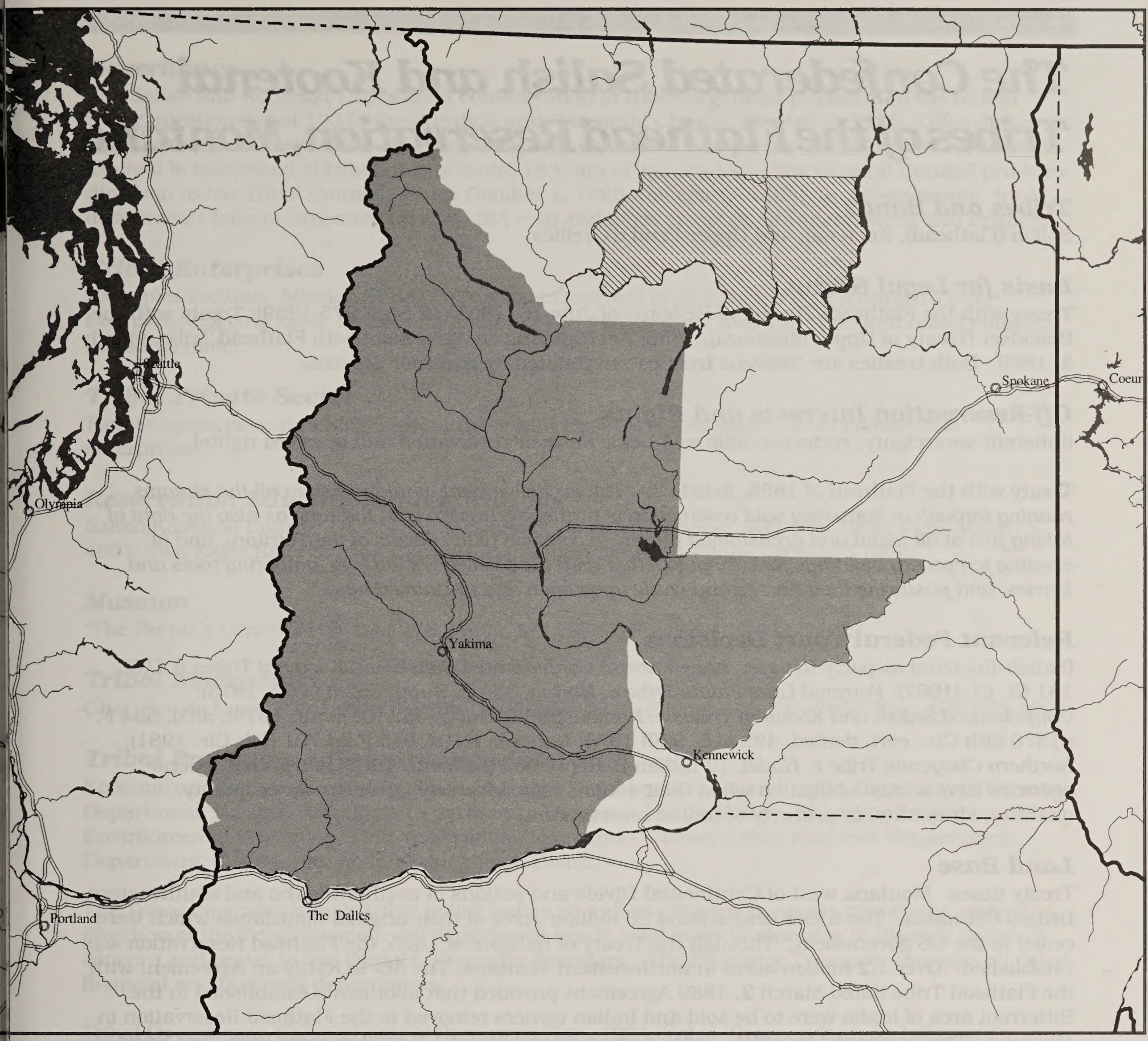
20 0 20 40 60 miles

20 0 20 40 60 km

N

- Colville Tribes Area of Interest
- Colville Reservation
- Water
- Major Rivers
- Major Roads
- State Borders
- EIS Area Border





Confederated Tribes of the Colville Reservation Map 2. Ceded Lands

Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

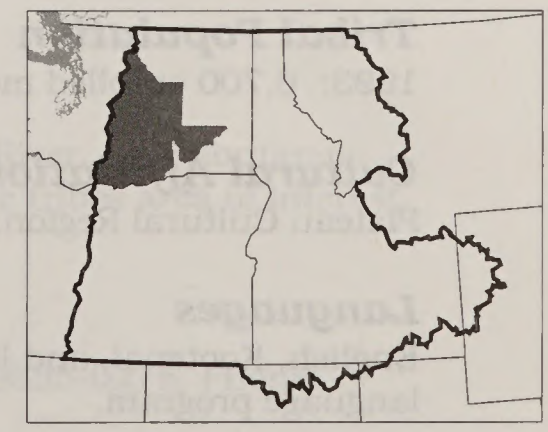
Project Area
1996

20 0 20 40 60 miles

20 0 20 40 60 km

N

- *Yakama Treaty*
- *Colville Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



The Confederated Salish and Kootenai Tribes of the Flathead Reservation, Montana

Tribes and Bands

Salish (Flathead), Kootenai, and Upper Pend d'Oreilles.

Basis for Legal Status

Treaty with the Flatheads (Treaty of Hellgate) of July 16, 1855 (12 Stat. 975 1859); Treaty with the Blackfeet (Treaty of Upper Missoura), 1855; Act Ratifying an Agreement with Flathead Tribe, March 2, 1889. Both treaties are "Stevens treaties", negotiated by governor Stevens.

Off-Reservation Interests and Rights

(inherent sovereignty, socioeconomic well-being on their reservation and reserved rights)

Treaty with the Flathead of 1855, Article 3: *"The exclusive right of taking fish in all the streams running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places, in common with citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."*

Relevant Federal Court Decisions

(Salish-Kootenai as party to case: none known) *Confederated Salish and Kootenai Tribes v. U.S.*, 181 Ct. Cl. (1967); *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973); *Confederated Salish and Kootenai Tribes v. Namen*, 380 F. Supp. 452 (D. Mont. 1974), aff'd, 534 F. d1376 (9th Cir., cert. denied, 429 U.S. 929) 1976; *Nance v. E.P.A.* 645 F.2d 701 (9th Cir. 1981); *Northern Cheyenne Tribe v. Hodel*, 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have a trust obligation when their actions may adversely affect the water quality/ quantity, air quality, or property of Indian reservations.

Land Base

Treaty times: Montana west of Continental Divide and potions of northern Idaho and southeastern British Columbia. The tribes held around 23 million acres of their original homelands which were ceded to the US government. Through the Treaty of Hellgate of 1855, the Flathead Reservation was established: Over 1.2 million acres in northwestern Montana; The Act to Ratify an Agreement with the Flathead Tribe dated March 2, 1889 Agreement provided that allotments established in the Bitterroot area of Idaho were to be sold and Indian owners removed to the Flathead Reservation in Montana. This happened by 1891; Today's reservation: About 1.3 million acres including lower quarter of Flathead River basin, south half of Flathead Lake, and lower Flathead River.

Tribal Headquarters

Confederated Salish and Kootenai Tribes; P.O. Box 278, Pablo, MT 59855-0278; Phone: 406-675-2700; Fax: 406-676-2806; Office hours: M-F, 8:00am– 4:30pm.

Tribal Population

1993: 6,700 enrolled members; 3,500 live on or near the reservation.

Cultural Affiliation

Plateau Cultural Region.

Languages

English, Kootenai, and Interior Salish. Tribal educational system is incorporating a native language program.

Governance

The Salish and Kootenai Tribes are a confederation of tribes organized pursuant to the Indian Reorganization Act of 1934. Constitution and Corporate Charter adopted in 1935: Official name of tribe comes from Constitution. The governing body consists of a 10 person Tribal Council. A General Council is comprised of tribal membership, 18 years of age or older. The General Council provides direction to the Tribal Council. Since October 1, 1995, the confederation is self-governing; tribal departments have incorporated previous BIA responsibilities except for fire suppression, and irrigation.

Tribal Enterprises

Examples include: Mission Valley Power, Kerr Dam and is co-licensed with Montana Power Company; Logging sales; Salish and Kootenai Electronics, Inc.; Kwa Taq Nuk, and resort complex including motel.

Tribal Private Sector

Timber operations; ranching; agriculture; retail trade; arts and crafts; other commercial enterprises.

Reservation Educational Institutions

Salish Kootenai College; Dr. Joseph McDonald, President; Phone: 406-675-4800; Fax: 406-675-4801; Two Eagle River School; Clarice King, Superintendent; Phone: 406-675-0292.

Museum

"The People's Center"; P.O. Box 278, Pablo, MT 59855; Phone: 406-675-0160.

Tribal Newspaper

Char-Koosta News; P.O. Box 278, Pablo, MT 59855-0278; Phone: 406-675-3000; Fax: 406-675-3001.

Tribal Programs (off-reservation interests)

Kootenai and Salish Cultural Committees; Legal Department; Law and Order Department; Forestry Department; Natural Resources Department: Divisions–Lands, Water: Shoreline Protection Office, Environmental Protection, Fish and Wildlife/Recreation/Conservation; Flathead Educational Department; Community Action Educational Board.

The Tribal Programs handle tribal policy issues as well as program business operations under the direction of the Tribal Council. All department heads meet every Wednesday to discuss issues of concern and report to Joe Dupuis, Executive Secretary. The Executive Treasurer oversees all tribal financial and business departments.

Tribal Operations: Comprehensive Resources Plan, 1994, Vol. 1–Compendium on tribes and reservation, Vol. 2–Resource Management Goals and Tribal Policies and Processes. Available by contacting tribal administration.

Special Environmental Designations

Flathead reservation was designated Class 1 airshed at the request of the tribe, approved by EPA as of 1980. Also, there is a nuclear waste ban and prohibition to transport such materials across the reservation.

Primary Tribal Fisheries

Kootenai and Flathead Rivers; Flathead Lake; Jocko River and Clarks Fork River. All tributaries originating on the reservation including streams and water bodies within the tribes area of interest. Includes all usual and accustomed fishing stations and grounds

Tribal Contact

Ralph Goode, Head, Tribal Forestry Department; P.O. Box 278, Pablo, MT 59855-0278; Phone: 406-675-7200, ext. 241; Fax: 406-675-7218.

Alexander "Sam" Morigeau, Head, Natural Resources Department; P.O. Box 278, Pablo, MT 59855-0278; Phone: 406-675-2700; Fax: 406-675-2806.

Patricia Hewankorn, Director, Kootenai Culture Committee; P.O. Box 155, Elmo, MT 59915; Phone: 406-849-5541.

Tony Incashola, Director, Salish Culture Committee; P.O. Box 418, St. Ignatius, MT 59865: Phone: 406-745-4572.

Marcia Cross, Tribal Preservation Officer, Preservation Office; P.O. Box 278, Pablo, MT 59855. Phone: 406-675-2700. FAX: 406-675-2806

Agency Contact

Ernest Moran, Superintendent, Flathead Agency, BIA; Box A, Pablo, MY 59855-5555; Phone; 406-675-7200: Fax: 406-675-2805.

Significant Events and Dates

Socio-cultural: From March through fall there are Pow Wow Celebrations, local school special celebrations, and other significant social gatherings that occur and are well attended by the Tribe. These often occur over weekends and may include Fridays. Unanticipated events that may obligate extended-family involvement, such as funerals and illnesses, could impact tribal meeting schedules.

Government: The Tribal Council of 10 members is elected from 5 reservation districts. Elections take place every 2 years with 5 council members being elected to 4 year terms. Following the elections, a Chair and Vice-chair are chosen by the Council, and a Secretary and Treasurer are selected at large by the General Council. Council officers are appointed by the Tribal Council. The Tribal Council acts as the General Council leadership. General Council convenes every Tuesday and Friday. Closed special sessions of the General Council involve the Tribal Council with interested parties. General Council convenes quarterly meetings to deal with important tribal business. Elections for Tribal Council seats are held in December with primaries held in November.

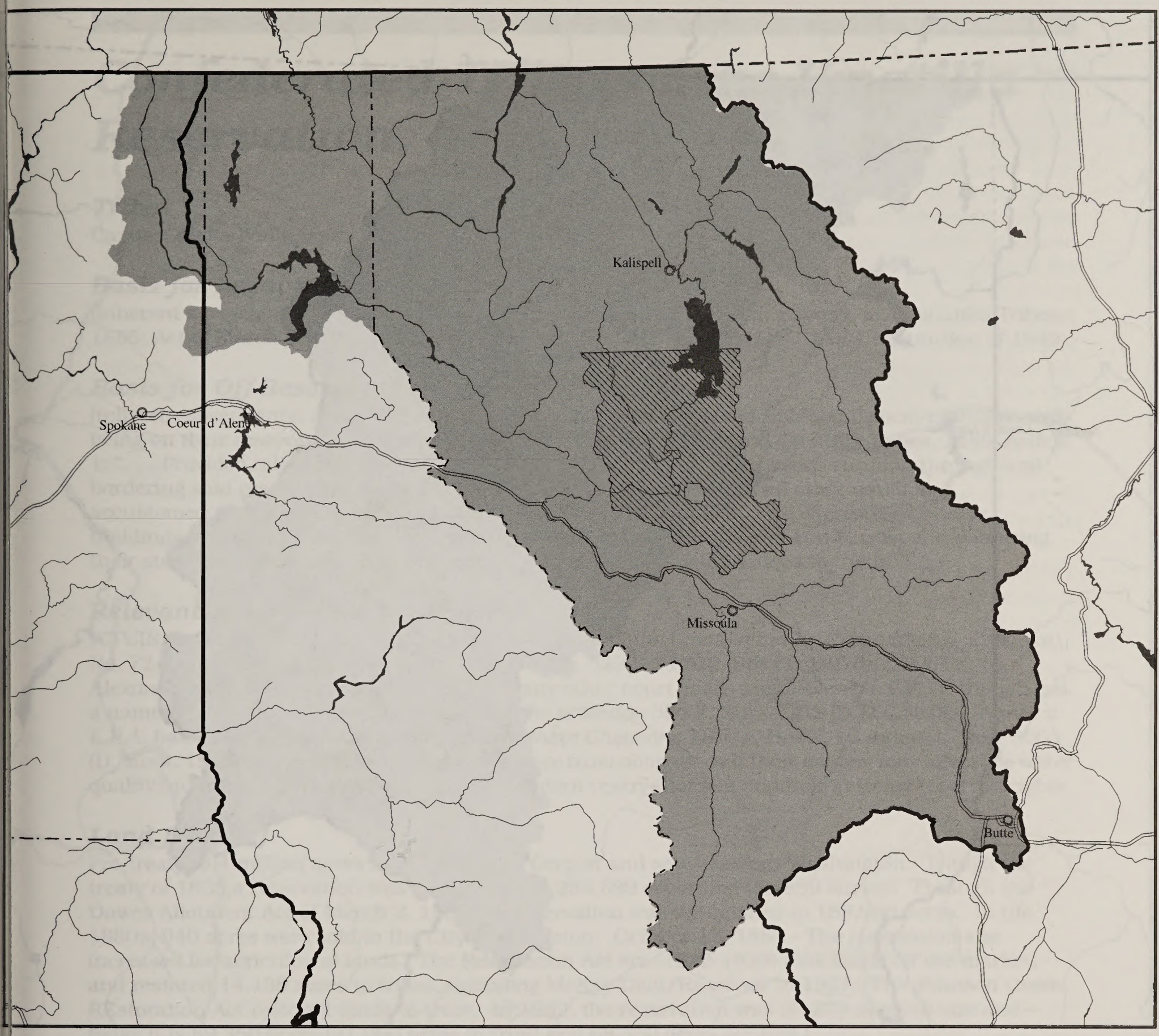
Tribal Council

Term from 1995-1999: Michael Pablo, Vice-Chair, Hot Springs/Camas Prairie District; Gary Stevens, Pablo District; Mike Durglo, Jr., St. Ignatius District; Elmer Morigeau, Dixon District; Joseph Moran, Arlee District.

Term from 1993-1997: Rhonda Swaney, Chair-Woman; St. Ignatius District; Carole Lankford, Secretary, Ronan District; Hank Baylor, Treasurer, Arlee District; Donald Dupuis, Polson District; Mary Lefthand, Big Arm/Elmo/Dayton District.

Contact: Rhonda Swaney, Chair-Woman Confederated Salish and Kootenai Tribes; P.O. Box 278, Pablo, MT 59855; Phone: 406-675-2700; Fax: 406-675-2806.

Tribal Council meets every Tuesday and Thursday with participation of the Tribal membership.



Confederated Salish & Kootenai Tribes Map 1. Area of Interest

Displayed interest area is subject to consultation with tribes. Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

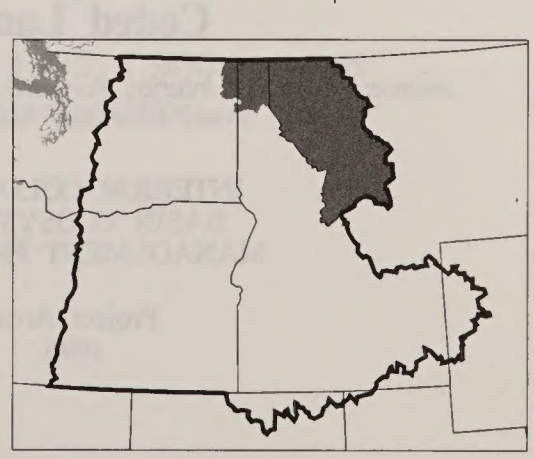
Project Area
1996

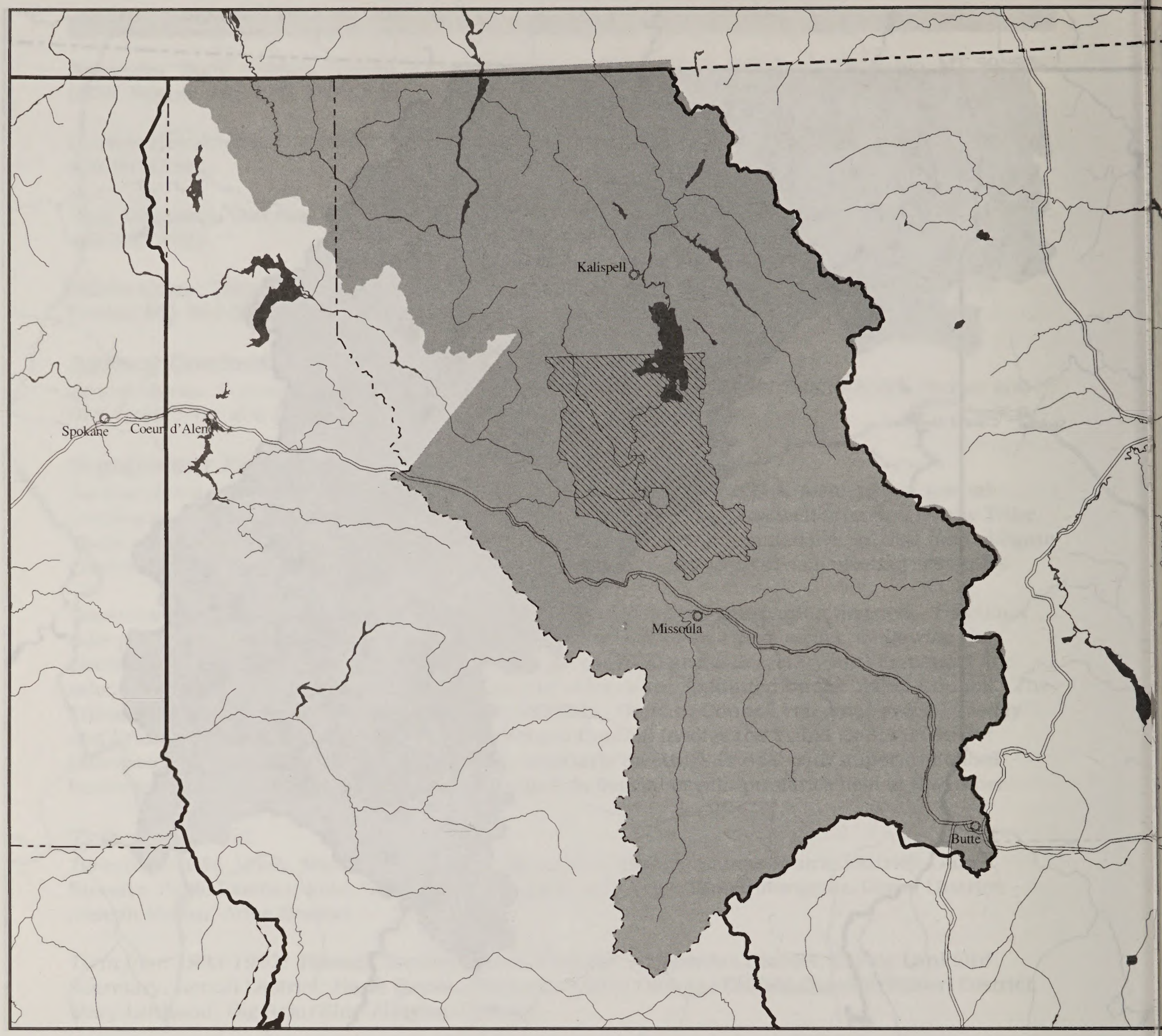
20 0 20 40 60 miles

20 0 20 40 60 km

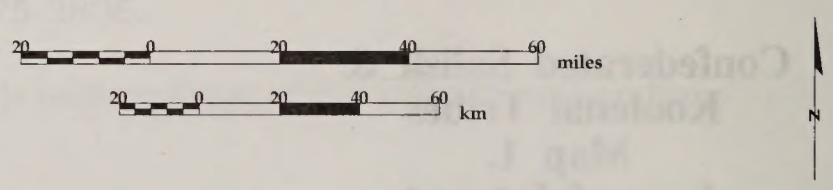
N

- *Salish & Kootenai Tribes Area of Interest*
- *Flathead Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*





Confederated Salish & Kootenai Tribes Map 2. Ceded Lands

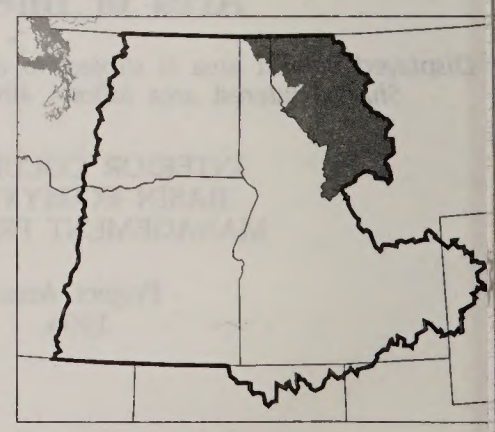


Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

- *Flathead Treaty*
- *Flathead Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



Confederated Tribes of the Umatilla Reservation, Oregon

Tribes
Cayuse, Walla Walla, and Umatilla Tribes.

Basis for Legal Status
(inherent sovereignty; U.S. constitution) Treaty with the Walla Walla, Cayuse, and Umatilla Tribes, 1855; Act of March 3, 1885, ratified on March 12, 1859 (Statute 945); CTUIR Constitution of 1949

Basis for Off-Reservation Interests/Rights
(inherent sovereignty, aboriginal rights; Pre-existing treaty reserved rights and socio-economic well-being on their reservation.) Treaty with the Walla Walla, Cayuse, and Umatilla Tribes, 1855, Article 1: ". . . Provided, also, that the exclusive right of taking fish in the streams running through and bordering said reservation is hereby secured to said Indians, and at all other usual and accustomed stations in common with citizens of the United States, and of erecting suitable buildings for curing the same; the privilege of hunting, gathering roots and berries and pasturing their stock on unclaimed lands in common with citizens, is also secured to them."

Relevant Federal Court Decisions
(CTUIR as named party to case) *Confederated Tribes of the Umatilla Indian Reservation v. Calloway*, No. 72-211 (D. Or. 1973); *United States v. Oregon*, 529 F.2d 570 (9th Cir. 1976). *CTUIR v. Alexander*, 440 F.Supp.553 (D.Or.1977). Many other court cases are relevant to CTUIR though not a named party. The *Pyramid Lake Paiute Tribe v. Morton* 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d 701 (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel*, 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have trust obligations if their actions may affect the water quality/quantity, air quality, or property of Indian reservations in addition to treaty reserved rights.

Land Base
Pre-treaty: 6.4 million acres in northeastern Oregon and southeastern Washington. Trough the treaty of 1855 a reservation was established at 254,699 according to 1859 survey. Through the Dawes Allotment Act of March 3, 1885 the reservation was diminished to 158,000 acres. In the 1880s, 640 acres were sold to the City of Pendleton. October 17, 1888 - The reservation size increased for agricultural lands. The Restoration Act era (1922-1939) took lands off the market, and restored 14,139 acres to tribes, including McKay Dam/Reservoir in 1927. The Johnson Creek REstoration Act restored lands to trust. In 1969, the reservation was 95,273 acres in size and today it is 89,350 acres (21,000 acres in trust and 68,350 acres allotted.)

Tribal Headquarters
Confederated Tribes of the Umatilla Indian Reservation, Mission Highway, Mission, OR; P.O. Box 638, Pendleton, OR 97801; Phone: 541-276-3165; Office hours: M-F, 7:30am– 4:00pm.

Tribal Population
Pre-1855: 8,000 [est.]; 1855 Treaty Era: 1,500 (BIA census); 1992: 1,456; and 1995: 1,900 enrolled members. According to a 1990 census there are 1,473 non-Indian reservation population.

Cultural Affiliation
Plateau Cultural Region, southeastern Plateau.

Languages
English, Sahaptin dialects (Umatilla, Walla Walla) Nez Perce dialects.

Governance

The Tribes rejected the Indian Reorganization Act in 1935 by tribal referendum. Constitution and By-laws were adopted November, 1949. The Tribes established a nine member Board of Trustees (BOT) and a General council, which replaced consensus decision making process by majority vote rule. The BOT sets policy, and makes final tribal decisions. Resource use is regulated by tribal ordinance and codes, customs, and traditions. Gary George is the Tribes' Executive Director and oversees departmental staff. Tribal departments include administration, economic and community development, health and human services, natural resources, education, fire protection, police and tribal services.

Pre-Treaty Economy

Fishing/Hunting/Gathering. Wholesale and retail inter-tribal trade extending from the Pacific coast to the Great Plains. Trading, livestock, tribute (taxes), raiding. Horse husbandry with herds estimated at 15,000 to 20,000. Warefare in the Great Plains and Great Basin.

Tribal Enterprises

Tribal Farm Enterprises; Mission Market; Duff Property; Lucky Seven Trailer Court; Indian Lake and Campgrounds; Wildhorse Casino; Youth Hall; Co-operative Umatilla Hatchery; grain elevator, Native plant nursery.

Tribal Private Sector

Agriculture; livestock; fishing; wholesale and retail trade; timber; food stands, artists, construction contractors.

Education Institutions

Cay-Uma-Wa, pre-school; charter school and native language program.

Museum

Tumustalik Cultural Institute (Oregon Trail Interpretive Center); Location: On the reservation off of Interstate 8. Opening scheduled for June 1997.

Tribal Newspaper

Confederated Umatilla Journal; P.O. Box 638, Pendleton, OR 97801; Phone: 541-276-3570; Published monthly.

Tribal Programs (off-reservation involvement)

Department of Natural Resources; Environmental Planning/Rights Protection; Umatilla Basin Project; Tribal Water Program; Special Sciences and Resources Program, Fisheries, Wildlife, Cultural Resources Protection, and Salmon Corps.

Tribal Fisheries

Grande Ronde, Imnaha, John Day, Tucannon, Walla Walla, Wallowa, Touche, Umatilla, Columbia, and Minam Rivers; Lookingglass, Eagle, Cathrine, Pine, and Willow Creeks and tributaries.

Tribal Contact

Kim Sullivan, Policy Analyst; Phone: 541-276-3449. Michael J. Farrow, Director DNR. Paul Minthorn, Deputy Director, DNR. Rick George, DNR Program Manager - Phone: 541-276-3449.

Agency Contact

Phil Sanchez, Superintendent, BIA; P.O. Box 520, Pendleton, OR 97801-0520; Phone: 541-278-3786; Fax: 541-276-3786.

Significant Events and Dates

Socio-cultural: The Tribes annually celebrate Salmon and Root Feasts, which includes feast preparations, a Pow Wow, Fun Run, Group Horse ride tours, and Flea Mart in the spring; Father's Day Fish Derby; Huckleberry Feast in mid-summer; Pendleton Round-up; Veterans' Day Pow Wow in the fall; Christmas; New Years; Dances in mid-winter; 4th of July Pow Wow; Atlatl contest.

Government: In 1993 the General Council voted to change a staggered term election system to one that elects all Board of Trustee members and General Council positions at the same time to two year terms. Elected Board of Trustee members then select Board of Trustee positions and committee members. Next elections will be held November 1997. General Council meets monthly to address tribal business and usually holds special General Council sessions periodically throughout the year.

Board of Trustees, CTUIR (9 members)

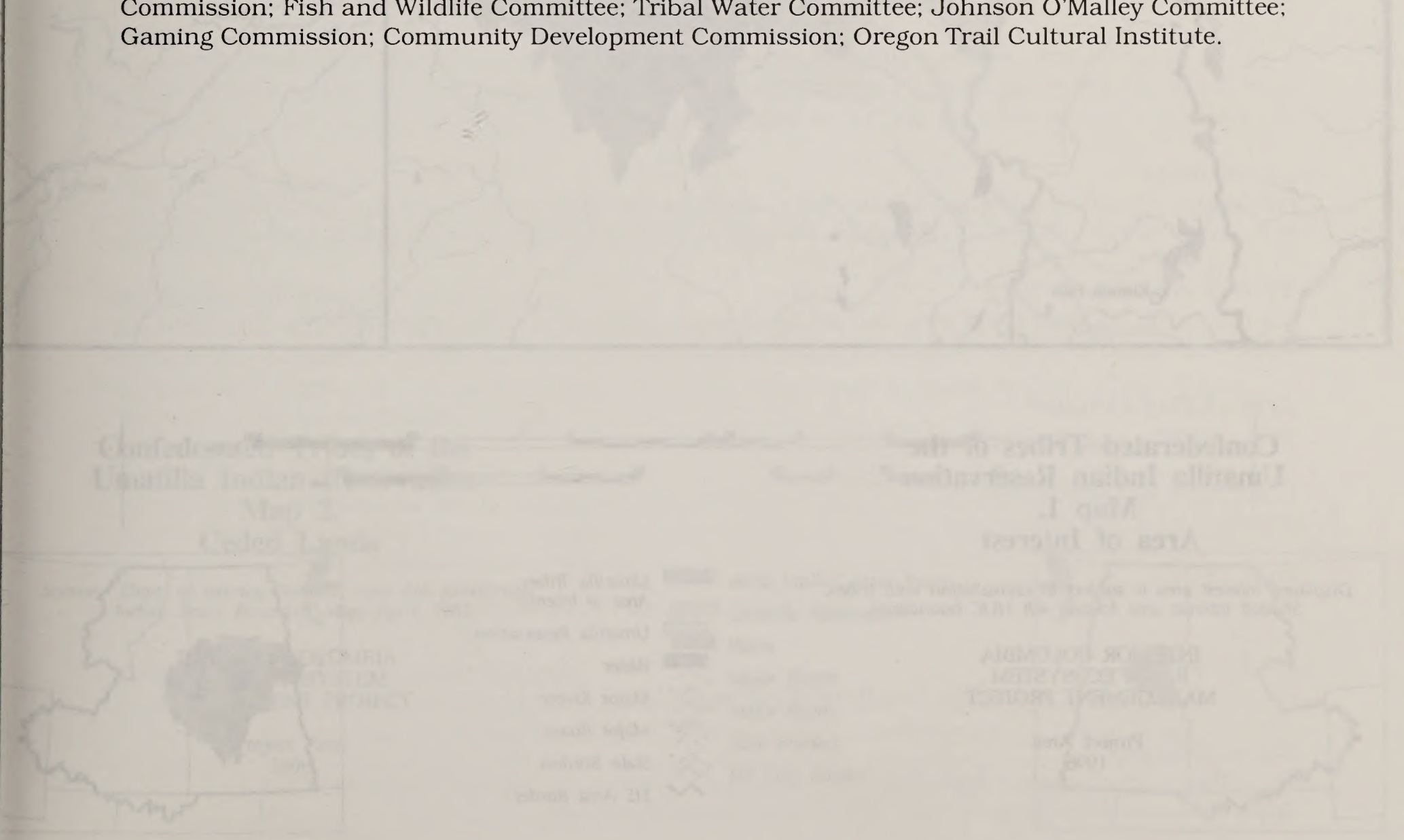
Donald Sampson, Chairman of Board of Trustees; Alphonse Halfmoon, Vice-Chair; Roberta Wilson, Secretary; Rosenda Shippentower, Treasurer; and Kathryn Brigham, Louie Dick, Jr., Armand Minthorn; Jay Minthorn and Antone Minthorn members.

General Council

Antone Minthorn, Chairman; Tom Piere, Vice-Chairman; Sam McKay, Secretary; Inez Reeves, Interpreter.

Commissions and Committees

All BOT members, except the Chair, participate in tribal commissions and committees established to oversee specific tribal issues. Health and Welfare Commission; Law and Order Commission; Natural Resources Commission; and Tribal Farm Committee; Umatilla Reservation Housing Authority; Cultural Resource Commission; Celebration Committee; Education and Training Commission; Fish and Wildlife Committee; Tribal Water Committee; Johnson O'Malley Committee; Gaming Commission; Community Development Commission; Oregon Trail Cultural Institute.



Olympia
Yakima
Kennewick
Portland
The Dalles
Pendleton
Salem
Eugene
Bend
Boise
Klamath Falls

Confederated Tribes of the Umatilla Indian Reservation Map 1. Area of Interest

Displayed interest area is subject to consultation with tribes. Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

50 0 50 100 miles

50 0 50 100 km

N

- *Umatilla Tribes Area of Interest*
- *Umatilla Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*

Confederated Tribes of the Umatilla Indian Reservation Map 2. Ceded Lands

Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

20 0 20 40 60 miles

20 0 20 40 60 km

N

- *Walla Walla/Cayuse Treaty*
- *Umatilla Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*

Confederated Tribes of the Warm Springs Reservation of Oregon

Tribes and Bands
Wasco Bands–Dalles, Ki-gal-twal-la, and Dog River; Warm Springs–Taih or Upper Deschutes, Wyam (Lower Deschutes), Tenino, Dock-Spus (John Day River); Northern Paiutes (Removed to Warm Springs Reservation in 1880s).

Basis for Legal Status
(inherent sovereignty, aboriginal rights) Treaty with the Tribes of Middle Oregon, 1855; Treaty with the Tribes of Middle Oregon, 1865–U.S. Government negated this treaty because signers did not understand what they were signing.

Basis for Off-Reservation Interests/Rights
(inherent sovereignty, aboriginal rights, socio-economic well-being on their reservations and reserved rights) Treaty with the Tribes of Middle Oregon, 1855, Article 1: ". . . Provided, also, that the exclusive right of taking fish in the streams running through and bordering said reservation is hereby secured to said Indians; and at all other usual and accustomed stations, in common with citizens of the United States, and of erecting suitable houses for curing the same; also the privilege of hunting, gathering roots and berries, and pasturing their stock on unclaimed lands, in common with citizens, is secured to them."

Relevant Federal Court Decisions
(Warm Springs as party to case) *Confederated Tribes of Warm Springs v. U.S.*, 117 Ct. Cl. 189 (1966); *Sohappy v. Smith*, 302 F. Supp. 899 (D. Or. 1969); *U.S. v. Oregon*, 529 F.2d 570 (D. Or. 1976). On reservation: *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d 701 (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel*, 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have trust obligations if their actions may affect the water quality/quantity, air quality, or property of Indian reservations.

Land Base
Pre-treaty: 10 million acres in Oregon; 1974: McQuinn tract was restored to the Tribes from the U.S. Forest Service. Today's reservation: 650,000 in central Oregon–over 90 percent tribally owned.

Tribal Headquarters
Confederated Tribes of the Warm Springs Reservation of Oregon; 1233 Veteran Street, P.O. Box C, Warm Springs, OR 97761; Phone: 541-553-1161; Office hours M-F, 7:30am–4:30pm.

Tribal Population
1992: 3,410.

Cultural Affiliation
Plateau and Great Basin.

Religions
Washat (Seven Drums), Wasklikie (Feather), Shaker, and Christian denominations.

Languages
English, Chinookan, Sahaptin, and Northern Paiute.

Governance
The tribal general council adopted the Indian Reorganization Act in 1935 and adopted a Constitution and By-laws in 1938. The tribes are self-governing.

Tribal Enterprises
Kah-Nee-Ta Resort; Tribal Construction; Warm Springs Power Enterprises; Warm Springs Crushing; Warm Springs Composite Products; Warm Springs Forest Products Industries; Warm Springs Apparel Industries; Warm Springs Clothing Company; Business Development: Special Products, Museum at Warm Springs, and Warm Springs Gaming.

Tribal Private Sector
Chevron Station; Deschutes Crossing; Warm Springs Market; Radio Station; Museum; Arts and Crafts; Commercial Services.

Museum
The Museum at Warm Springs; Just off Highway 26 near Warm Springs; Phone: 541-553-3331.

Tribal Newspaper
Spilyay Tymoo; P.O. Box 870, Warm Springs, OR 97761; Phone: 541-553-1644; Published bi-weekly.

Tribal Radio
Public Radio; KWSO 91.9 FM, Phone: 541-553-1968.

Tribal Programs (off-reservation involvement)
Cultural and Heritage; Law and Order; Wildlife, and Fish; Natural Resources: Environmental protection.

Tribal Fisheries
Columbia, Crooked, Deschutes, Hood, and John Day Rivers, Fifteen Mile Creek.

Tribal Contact
Olney (JP) Patt Jr., Natural Resources; Phone: 541-553-3233/3234; Fax: 541-553-3359.
Other Contacts: Delvis Heath, ceded area expert, Warm Springs Chief; Delbert Frank, Culture and Heritage Committee; Gene Greene Sr., Chairman, Columbia River Inter-Tribal Fish Commission (CRITFC) and Fish and Wildlife Committee, Head of Policy, Natural Resources Department; Charles (Jody) Calica, General Manager, Natural Resources Department; Louie Pitt Jr., Director, Governmental Affairs and Planning: staff support to Tribal Council; Secretary-Treasurer: records management, tribal code, and intergovernmental relations.

Agency Contact
Gordon Cannon, Superintendent of Warm Springs Agency; P.O. Box 1239, Warm Springs, OR 97761-1239; Phone: 541-553-5527; Fax: 541-553-2426.

Significant Events and Dates
Socio-cultural: Salmon and Root Feasts; Huckleberry Feast; Pow Wow dances; Sports tournaments; Rodeos; Horse Races; Pi-Ume-Sha Treaty Days Celebration each June.
Government: Eight tribal council members are elected for 3 year terms each year. Chiefs have lifetime tenure on the council.

Tribal Council of CTWSR
Joseph Moses, Chairman, Tribal Council of CTWSR; Irene Wells, Vice-Chair; R. Calica Sr., Secretary/Treasurer/CEO; Bruce Brunoe, Sr., Agency District; Zane Jackson, Agency District; Jacob Frank, Sr., Simnasho District; Wilson Wewa, Sr., Seekseequa District; Kathleen Heath, Simnasho District; Delvis Heath, Sr., Chief (Warm Springs); Vernon Henry, Chief (Paiute); Nelson Wallulatum, Chief (Wasco).

Tribal Committees and Boards
(Examples) Council on Alcohol and Drug Abuse; Culture and Heritage Committee; Education Committee; Election and Counting Board; Fish and Wildlife Committees (on and off-reservation); Health and Welfare Committee; Land Use Planning Committee; Accessions Committee (MOIHS); Museum Boards (Directors and Regents); Range, Irrigation, and Agriculture Committee; Tax Commission; Timber Committee; Forest Products Industry; Water Board.

Confederated Tribes of the Warm Springs Reservation Map 1. Area of Interest

Displayed interest area is subject to consultation with tribes. Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

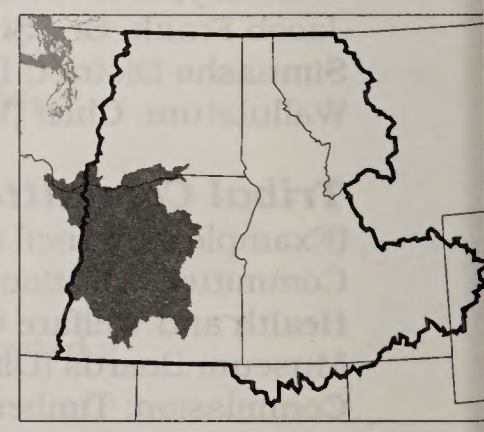
Project Area
1996

50 0 50 100 miles

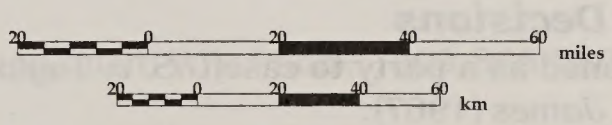
50 0 50 100 km

N

- *Warm Springs Tribes Area of Interest*
- *Warm Springs Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



Confederated Tribes of the Warm Springs Reservation Map 2. Ceded Lands

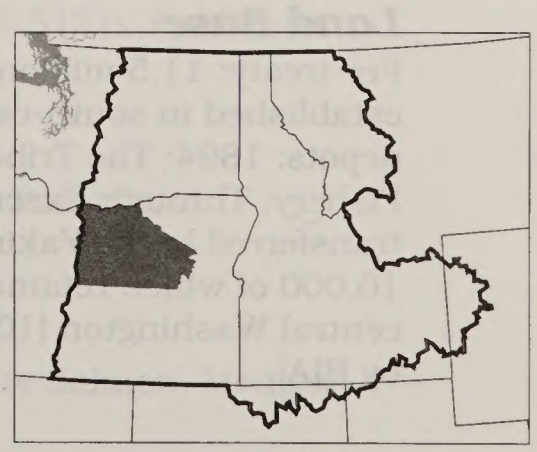


Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA BASIN ECOSYSTEM MANAGEMENT PROJECT

Project Area
1996

- *Middle Oregon Treaty*
- *Warm Springs Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



Confederated Tribes and Bands of the Yakama Indian Nation of the Yakama Reservation, Washington

Tribes and Bands

Klickitat, Klinquit, Li-ay-was, Kow-was-say-ee, Oche-chotes, Palouse, Shyiks, Pisquose, Se-ap-cat, Skinpah, Wishram, Wenatshpam, Yakama, and Kah-milt-pah.

Basis for Legal Status

(inherent sovereignty) Treaty with the Yakama Nation, June 9, 1855; Agreement of January 13, 1885; Executive Order of November 21, 1892: Request to survey and establish boundaries and comply with the Treaty of 1855. The spelling of Yakama was changed back to the original spelling in the Treaty of 1855 by vote of the Tribal Council on Jan 24, 1994 (Yak[i]ma to Yak[a]ma).

Basis for Off-Reservation Interests/Rights

(inherent sovereignty, aboriginal rights, socio-economic well-being on their reservation and treaty reserved pre-existing rights) *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F. 2d 701 (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel* 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have trust obligations when their actions may adversely affect the water quality/quantity, air quality, or property of Indian reservations. Yakama Treaty of 1855, Article 3: *"The exclusive right of taking fish in all the streams, where running through or bordering said reservation, is further secured to said confederated tribes and bands of Indians, as also the right of taking fish at all usual and accustomed places, in common with the citizens of the Territory, and of erecting temporary buildings for curing them; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."*

Relevant Federal Court Decisions

(Yakama as a party to case) *U.S. v. Winans* (1905); *Seufert v. Olney*, 193 F. Supp. 200 (E.D. Wash. 1911); *United States v. Seufert Brothers Co.*, 232 F. Supp. 579 (D. Or 1916), aff'd sub nom; *Seufert Brothers Co. v. U.S.* (1918); *Confederated Tribes of Yakima Indian Nation*, 249 U.S. 194 (1919); *Tulee v. State of Wash.* (1942); *Whitefoot v. U.S.*, 293 F. 2d. 658 (Ct. Cl. 1961, cert. denied, 369 U.S. 818) 1962; *Sohappy v. Smith/U.S. v. Oregon* decision (1969); *Settler v. Yakima Tribal Court*, 419 F. 2d 486 (9th Cir. 1969), cert. denied 398 U.S. 903 (1970); *Settler v. Lameer* (1974); *U.S. v. Washington* (1974); *U.S. v. Washington* (1985); *Kittitas Reclamation District v. Sunnyside Valley Irrigation*; *Washington v. Wash. Commercial Passenger Fishing Vessel* (1979); *U.S. v. Washington* (1994).

State Court Decisions

(Yakama mentioned as a party to case)*U.S. v. Taylor* (1887); *State v. Meninook*, 115 Wash. 528 (1921); *State v. James* (1967).

Land Base

Pre-treaty: 11.5 million acres or about 25 percent of Washington State. 1855: A reservation was established in south-central Washington; 1885: The Tribe relinquish land for roads, railroads, and depots; 1894: The Tribal Government relinquish the treaty land reserved for the Wenatshapam Fishery; Through Executive Order 11670, signed by the President on May 20, 1972, Tract D was transferred to the Yakima Nation from the U.S. Forest Service. Tract D includes 21,000 acres, 10,000 of which retained its wilderness status. Today's reservation: 1.3 million acres south-central Washington (102,441 acres Trust land, 34,522 acres Fee land, and 38 acres administered by BIA).

Tribal Headquarters
Yakama Indian Nation; Fort Road, P.O. Box 151, Toppenish, Washington 98948; Phone: 509-865-5121; Fax: 509-865-2049; Office hours: M-F, 7:30am–4:30pm.

Tribal Population
1855: 3,900 [est.]; 1992: 8,500; 1995: 8,435.

Cultural Affiliation
Plateau Cultural Region.

Religions
Washat (Seven Drums), Feather, Shaker, and Christian denominations.

Languages
English, Numerous Sahaptin dialects, Chinookan, and Salish.

Governance
The Tribal Council is the governing body by the authority enacted by the General Council Resolution T-38-56. The modern form of democratic government is defined by the General Council Resolution of February 18, 1944, General Council Resolution Number 4 of July 9, 1947, General Council Resolution of July 12, 1949, General Council Resolution T-38-56 of December 6, 1955, and Tribal Council Resolution T-10-61 of July 13, 1960. The tribe has a self-determination form of government, and functions through traditional laws, ordinances and resolutions as opposed to having a constitution.

Pre-Treaty Economy
Fishing/Gathering/Hunting; Extensive inter-tribal commerce with regional influence.

Tribal Enterprises
Yakama Nation Land Enterprise; Recreational Vehicle Park; Wapato Industrial Park; Real Yakama Fruit Stand; Production Orchards; Mont. Adams Furniture Factory; Heritage Inn Restaurant; Yakama Nation Credit Enterprise; Yakama Nation Cultural Center; Buffalo Herd Project.

Tribal Private Sector
Agriculture; ranching; fisheries; forestry; arts and crafts; construction; retail trade; and other commercial services.

Reservation Education Institutions
Heritage College, White Swan Road; Phone: 509-865-2244.

Museum
Yakama Nation Museum; South of highway 97, Toppenish, WA; Phone: 509-865-2800.

Tribal Newspaper
Yakama Nation Review; P.O. Box 310, Toppenish, WA 98948; Phone: 509-865-5121. Published every other Friday.

Tribal Programs (off-reservation involvement)
Fisheries; Cultural Resources; Wildlife; Forestry Management; Environmental Protection; Environmental Restoration Waste Management; Economic Development.

Tribal Fisheries
Wind, Klickitat, Yakama, Wenatchee, Columbia, Little White Salmon, Big White Salmon, Methow, Entiat, and Okanogan Rivers.

Tribal Contact

Lee Carlson, Fisheries Biologist; Phone: 509-865-6262; (DG–L.Carlson:R06F17D08A. Mr. Carlson monitors Forest Service and BLM agency programs and activities.

Agency Contact

Ernie Clark, Superintendent, Yakama Agency, BIA; Phone: 509-865-5121.

Significant Events and Dates

Socio-cultural: Salmon and Root Feasts are held in April-May; Huckleberry Feasts in late June to early August; Speelyi-Mi Annual Indian Trade Fair in mid-March; Various Pow Wow dances; Basketball Tournaments; All-Indian Golf Tournament; Rodeos; Veterans dinners at Pioneer Fair, Indian Village Toppenish, WA are held throughout the year.

Government: Elections are held every two years to elect one-half of the Council for four-year terms.

Yakama Tribal Council

Ross Sockzehigh, Chairman; Jerry Meninick, Vice-Chair; Sharon Goudy, Secretary; Augustine Howard, Assistant Secretary; Clifford Moses Sr., Sergeant at Arms; Council members: Russel Billy, Dave Blodgett, Fred Ike, Sr., Ray C. James, Wendall Hannigan, Lonnie Selam Sr., Cecil Sanchey, Arlene Washines, and William Yallup Sr.

The Tribal Council consists of 14 members elected by the General Council membership, 18 years and older. The General Council is led by elected council representatives. The Tribe's daily business is overseen by the Tribal Council; their 8 standing committees and 7 special committees are comprised solely of Tribal Council members. Staff work supporting the committees is done by tribal programs and departments. Federal agency activity issues are typically worked out through a designated tribal liaison and supporting tribal staff to the committees; they in turn report to the full Tribal Council.

General Council

Jeffery Bill, Chairman; Tony Washines, Vice-Chairman; Joe Jay Pinkham, Secretary.

Tribal Council Committees

Eight standing committees: Timber; Grazing, Overall Economic Development; Fish, Wildlife, and Law and Order; Loan, Extension, Education and Housing; Health, Employment, Welfare, Recreation and Youth Activities; Roads, Irrigation and Land; Enrollment; Legislative; Budget and Finance;

Seven Special Committees: Tax; Immigration; Public Relations/Media; Cultural; Radioactive/ Hazardous Waste; Heritage Center; Timber, Fish and Wildlife.

Confederated Tribes and Bands of the Yakama Indian Nation Map 1. Area of Interest

Displayed interest area is subject to consultation with tribes. Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

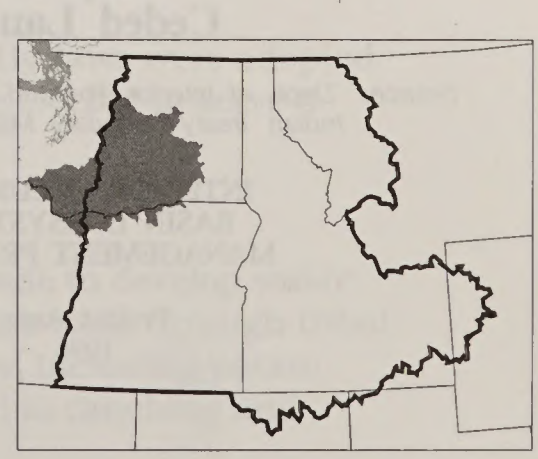
Project Area
1996

20 0 20 40 60 miles

20 0 20 40 60 km

N

- Yakama Tribes Area of Interest
- Yakama Reservation
- Water
- Major Rivers
- Major Roads
- State Borders
- EIS Area Border



Seattle
Spokane
Olympia
Yakima
Kennewick
Portland
The Dalles

Confederated Tribes and Bands of the Yakama Indian Nation Map 2. Ceded Lands

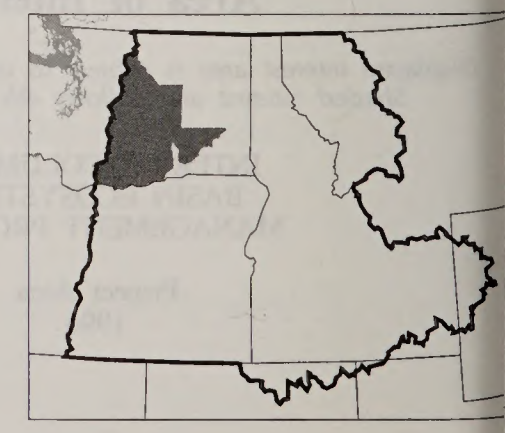
Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

20 0 20 40 60 miles
20 0 20 40 60 km
N

- *Yakama Treaty*
- *Yakama Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



Fort McDermitt Paiute and Shoshone Tribes of the Fort McDermitt Indian Reservation, Nevada

Tribes and Bands
Northern Paiute and Shoshone Tribes. The Denio and McDermitt area was the southeastern most territory of the Northern Paiute.

Basis for Legal Status
(inherent sovereignty) This reservation was established as a military post in 1867 and abandoned some years later. The site was transferred to the Secretary of the Interior by Executive Order in 1889, making the area public domain land. The act of August 1, 1890 authorized the disposition of the land under the Homestead Law. In 1892, allotments of this land were made to the Indians under the General Allotment Act of 1887.

Basis for Off-Reservation Interests/Rights
(inherent sovereignty, and socio-economic well-being on their reservation.) *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel* 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have trust obligations when their actions may adversely affect water quality/quantity, air quality, or property of Indian reservations.

Land Base
1892: 35,000 acres under the Homestead Act were granted to the Tribes around the fort after the facilities were dissolved. Today's reservation: 35,166 acres are Tribal owned in Nevada (16,336) and in Oregon (18,830); 116,192 acres are in tribal trust.

Tribal Headquarters
Fort McDermitt Paiute-Shoshone Tribe; Fort McDermitt Tribal Council, P.O. Box 457, McDermitt, NV 89421; Phone: 702-532-8259; Fax: 702-532-8903.

Tribal Population
1996: 395 enrolled members reside on or adjacent to the reservation; total membership is about 840.

Religions
Traditional religions and Christian denominations.

Languages
English, Paiute and Shoshoni.

Governance
The Tribe adopted the Indian Reorganization Act of 1934. Constitution and By-laws were adopted in 1936. The governing body is the Tribal Council, whose eight members are elected to serve 4-year terms.

Tribal Enterprises
About 3500 reservation acres were irrigated in the 1980s, and plans were made to develop water storage along the Quinn River in Northern Nevada. Employment opportunities exist through tribal programs, projects, and government activities. Specialized agricultural crops, including potato farms, provide some employment; other opportunities are seasonal or limited to ranching and

agricultural enterprises. Fort McDermitt Cattlemen's Association was established through the BIA using the authority of the Indian Re-organization Act. They have interest in about 35,000 acres of BLM range lands adjacent to their reservation. Production of forage hay and pasture is viable on the reservation, but water availability is sporadic except in above normal water years.

Tribal Programs (off-reservation interests)

Cultural Resources, and range program.

Tribal Contact

Wilson Crutcher, Chairman; Fort McDermitt Tribal Council; P.O. Box 457, McDermitt, NV 89421; Phone: 702-532-8259; Fax: 702-532-8903.

Agency Contact

Robert Hunter, Superintendent, BIA; 1677 Hot Springs Rd. Carson City, NV 89706; Phone: 702-887-3503; Fax: 702-887-3531.

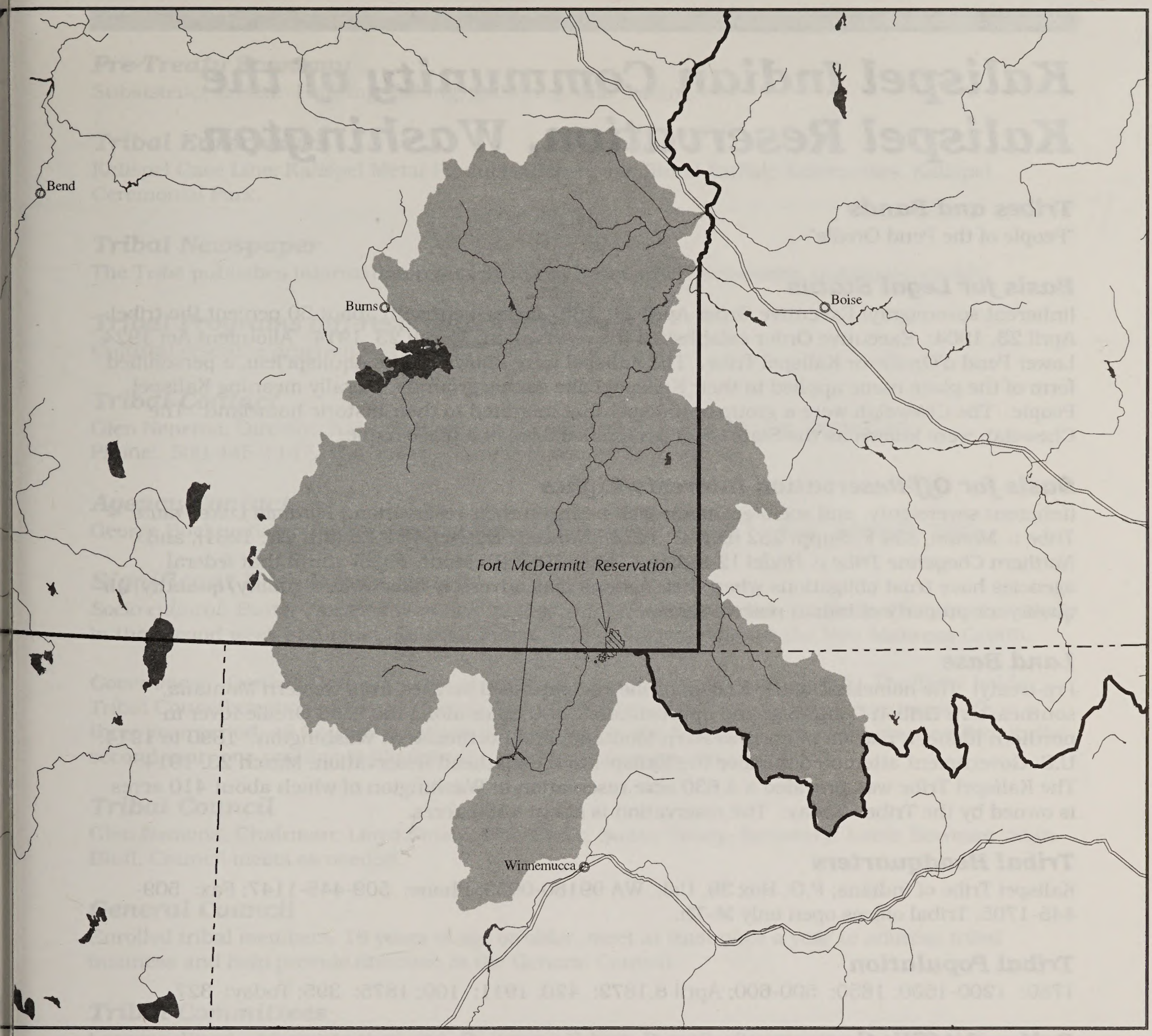
Scott Bell, District Ranger, Forest Service; 2035 Last Chance Rd. Elko, NV 89801-4938; Phone: 702-738-5171; Fax: 702-778-0299.

Significant Events and Dates

Government: The Tribal Council elections are held every four years in November. The last election was held in November 1995. The Tribal Council meets on the second Tuesday of each month; the enrolled members of the General Council are welcome to attend.

Tribal Council

Wilson Crutcher, Chairman; Ernestine Coble, Treasurer; Council members: Bradley Crutcher. Remaining 5 council positions are pending.



Fort McDermitt Paiute and Shoshone Tribes Map 1. Area of Interest

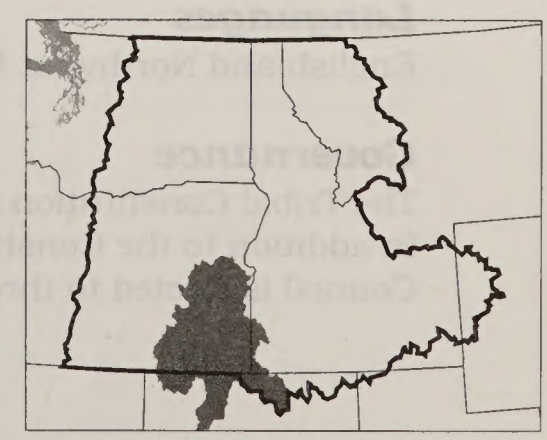
Displayed interest area is subject to consultation with tribes.
Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

50 0 50 100 miles
50 0 50 100 km
N

- Fort McDermitt Tribes Area of Interest
- Water
- Major Rivers
- Major Roads
- State Borders
- EIS Area Border



Kalispel Indian Community of the Kalispel Reservation, Washington

Tribes and Bands
"People of the Pend Oreille"

Basis for Legal Status
(inherent sovereignty) Executive Order April 21, 1887 (agreement with about 50 percent the tribe); April 23, 1904: Executive Order established the reservation; March 23, 1914: Allotment Act 1924 Lower Pend d'Oreille or Kalispel Tribe. The Kalispel were known as the Aqulispi'lem, a personified form of the place name applied to their Kalispel Lake camas grounds, literally meaning Kalispel People. The Chewelah were a group of Kalispel that migrated to their historic homeland. The Chewelah were known as the Slate'ise, a personified form of a place name.

Basis for Off-Reservation Interests/Rights
(inherent sovereignty, and socio-economic well-being on their reservation.) *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel* 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have trust obligations when their actions may adversely affect water quality/quantity, air quality, or property of Indian reservations.

Land Base
Pre-treaty: The homeland of the Kalispel tribe encompassed an area from western Montana, southeastern British Columbia, and approximately 200 miles along the Pend Oreille River in northern Idaho, a portion of northwestern Montana, and northeastern Washington. 1890 to 1914: U.S. Government attempted to move the Kalispel to the Flathead Reservation; March 23, 1914: The Kalispel Tribe was provided a 4,630 acre reservation in Washington of which about 410 acres is owned by the Tribe. Today: The reservation is about 4550 acres.

Tribal Headquarters
Kalispel Tribe of Indians; P.O. Box 39, Usk, WA 99180-0039; Phone: 509-445-1147; Fax: 509-445-1705; Tribal offices open only M–Th.

Tribal Population
1780: 1200-1500; 1850: 500-600; April 8,1872: 420; 1911: 100; 1875: 395; Today: 327.

Cultural Affiliation
Southern Plateau.

Religions
Christian denominations, primarily Catholic.

Languages
English and Northwest Interior Salish dialects.

Governance
The Tribal Constitution and Charter was adopted on March 24, 1938 and revised on July 27, 1967. In addition to the Constitution, Tribal Council resolutions create tribal law. The five member Tribal Council is elected to three year terms.

Pre-Treaty Economy
Subsistence based: Hunting, fishing, gathering, and trading.

Tribal Enterprises
Kalispel Case Line; Kalispel Metal Products; Sen-tu-me Store; Buffalo Enterprises, Kalispel Ceremonial Park.

Tribal Newspaper
The Tribe publishes information regularly in the New Cusick Newsletter, published weekly.

Tribal Programs (off-reservation interests)
Cultural resource program.

Tribal Contact
Glen Nenema, Director, Kalispel Business Committee; P.O. Box 39 Usk, WA 99180; Phone: 509-445-1147. Bill Towey, Natural Resource Department.

Agency Contact
George Buckingham; Colville National Forest; Phone: 509-684-3711; Fax: 509-684-7280.

Significant Events and Dates
Socio-cultural: Barter Fair Pow Wow held in May and September; Salish Traditional Fair held annually in the second week of August; Kalispel Indian Rodeo; Annual Mass at the New Manresa Grotto.

Government: General Council meets at least once a year, usually in early fall. The Tribe holds Tribal Council elections in June of each year. These five positions are three year terms. Over a three year period, all Council positions are elected. In the first year, two positions are filled; in the second year, one position is filled; in the third year, two positions are filled.

Tribal Council
Glen Nenema, Chairman; Lloyd Finley, Vice-Chair; Susan Finley, Secretary; Loren Bowman, Stan Bluff, Council meets as needed.

General Council
Enrolled tribal members, 18 years of age or older, meet at least once a year to address tribal business and help provide direction to the General Council.

Tribal Committees
Lorraine Wood, Administration and Business; Robert Russell, Community Services; Mike Jones, Community Development; Bill Towey, Natural Resources; Dave Bonga, Planning, Education and Research.

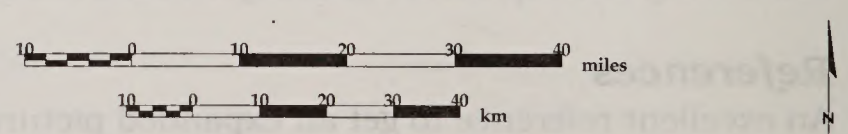
References
An excellent reference to get an expanded picture of the Kalispel Tribe is the publication called *The Kalispels: People of the Pend Oreille*, 1980, O. J. Cotes, Editor and Project Director. Published by the Office of Technical Assistance and Training, Brigham City, Utah 84302.

Kalispel Tribe of Indians
Map 1.
Area of Interest

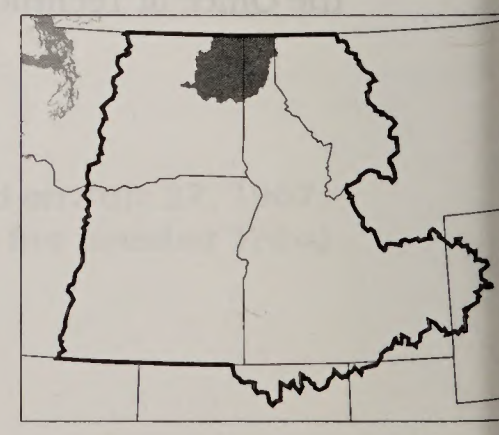
Displayed interest area is subject to consultation with tribes.
Shaded interest area follows 4th HUC boundaries.

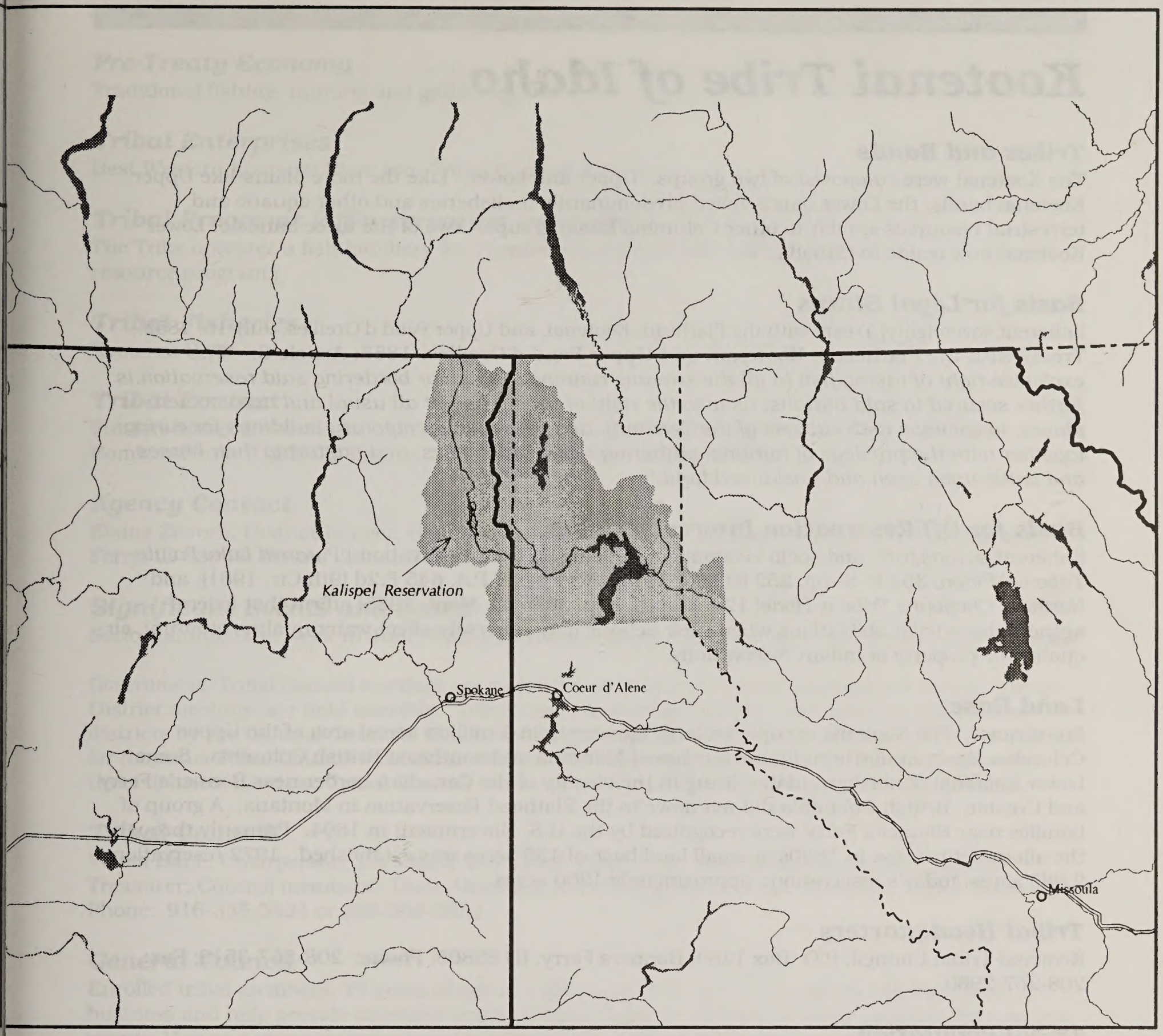
INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

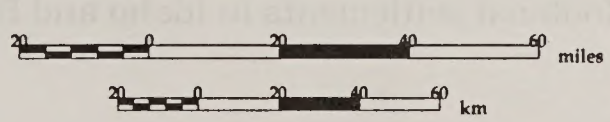


- *Kalispel Tribe Area of Interest*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*





Kalispel Tribe of Indians
Map 2.
Court of Claims

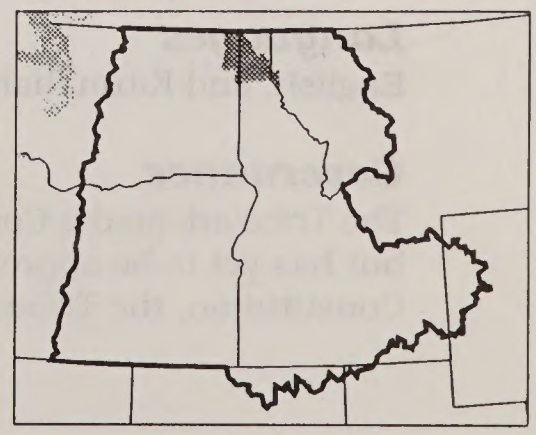


Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

- *Kalispel Tribe of Indians Court of Claims*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



Kootenai Tribe of Idaho

Tribes and Bands

The Kootenai were composed of two groups: Upper and Lower. Like the more plains-like Upper Kootenai bands, the Lower bands relied predominantly on fisheries and other aquatic and terrestrial resources similar to other Columbia Basin groups. Two of the three bands of Lower Kootenai now reside in Canada.

Basis for Legal Status

(inherent sovereignty) Treaty with the Flathead, Kootenai, and Upper Pend d'Oreilles, July 16, 1855. Treaty with the Flatheads, Kootenai, and Upper Pend d'Oreilles, 1855; Article 3: *"The exclusive right of taking fish in all the streams running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places, in common with citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."*

Basis for Off-Reservation Interests/Rights

(inherent sovereignty, and socio-economic well-being on their reservation.) *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel* 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have trust obligations when their actions may adversely affect water quality/quantity, air quality, or property of Indian reservations.

Land Base

Pre-contact: The Kootenai occupied a large (greater than 1 million acres) area of the Upper Columbia Basin in northern Idaho, northwest Montana and southeast British Columbia. Some Lower Kootenai of northern Idaho, living in the vicinity of the Canadian border near Bonner's Ferry and Creston, British Columbia did not move to the Flathead Reservation in Montana. A group of families near Bonner's Ferry were recognized by the U.S. Government in 1894. Primarily through the allotment process in 1890s, a small land base of 135 acres was established. 1972 reservation: 2,683 acres; today's reservation: approximately 1300 acres.

Tribal Headquarters

Kootenai Tribal Council; P.O. Box 1269, Bonners Ferry, ID 83805; Phone: 208-267-3519; Fax: 208-267-2960.

Tribal Population

1995: 110 enrolled members. The size of the reservation population fluctuates as people move freely between Kootenai settlements in Idaho and British Columbia.

Religions

Christian denominations and Traditional beliefs.

Languages

English, and Kitunahan dialects.

Governance

The Tribe adopted a Constitution in 1947. The Tribe has proposed a revision of their Constitution, but has yet to be approved by the Secretary of the Department of Interior. In addition to the Constitution, the Tribe is regulated by a code of conduct.

Pre-Treaty Economy
Traditional fishing, hunting and gathering, etc.

Tribal Enterprises
Best Western Kootenai River Inn; Tribal Gaming Resort.

Tribal Programs (off-reservation interests)
The Tribe operates a fish hatchery for Threatened and Endangered, White Sturgeon and cultural resource program.)

Tribal Fisheries
Kootenai River.

Tribal Contact
Preston Kinne, Environmental Project Coordinator; Kootenai Tribal Council; P.O. Box 1269, Bonners Ferry, ID 83805; Phone: 208-267-3519; Fax: 208-267-2960.

Agency Contact
Elaine Zieroth, District Ranger, Bonners Ferry Road, Idaho Panhandle National Forest, Bonners Ferry, ID 83805; Phone: 208-267-2512.

Significant Events and Dates
Socio-cultural: 2nd week in June, Kootenai Tribe of Idaho Pow Wow holiday, Bonners Ferry, Idaho.

Government: Tribal Council meetings are held regularly; General Council meetings are held quarterly; District meetings are held monthly. Tribal Council members are elected from four reservation districts by the General Council. The Tribal Council is elected for four year terms. The last election for the entire Tribal Council was held in October 1995. The reservation is divided into four districts; three districts have two Tribal Council positions each, and the fourth district has one position.

Tribal Council
Velma Bahe, Chairperson; Bernadine Boy Chief, Vice-Chair; Ileen Wheaton, Secretary; Myuk, Treasurer; Council members: Dixie Abraham; Amy Trice; Diane David. Kootenai Tribal Council: Phone: 916-335-5421 or 800-305-5551.

General Council
Enrolled tribal members, 18 years of age or older, meet at least once a year to address tribal business and help provide direction to the General Council. General Council meets at least once a year in May and may convene special meetings as warranted by Tribal issues.

Kootenai of Idaho Reservation

Bonners Ferry

Spokane

Coeur d'Alene

Missoula

20 0 20 40 miles

20 0 20 40 km

N

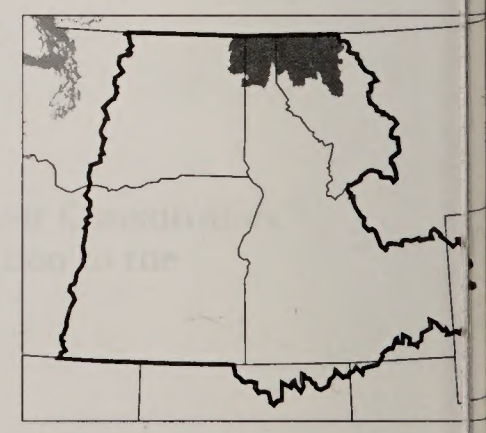
Kootenai Tribe of Idaho
Map 1.
Area of Interest

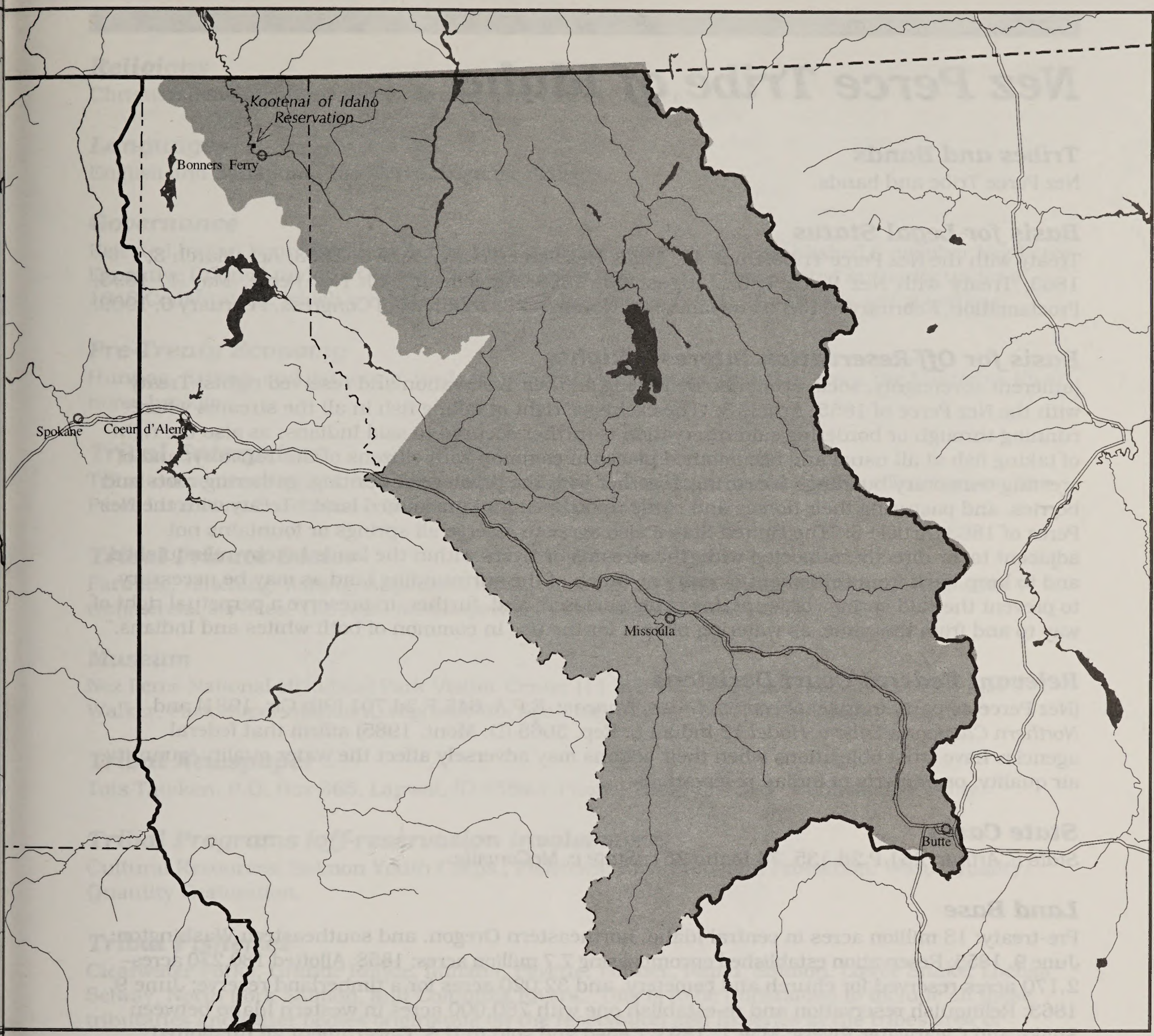
Displayed interest area is subject to consultation with tribes.
Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

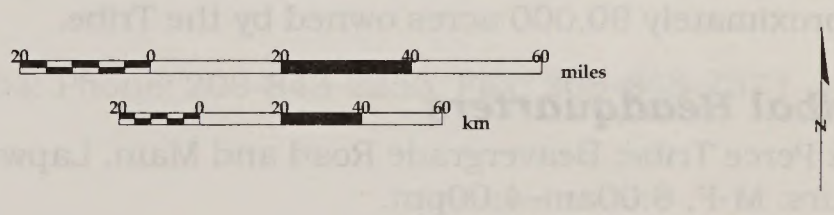
Project Area
1996

- *Kootenai Tribe of Idaho Area of Interest*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*





Kootenai Tribe of Idaho
Map 2.
Ceded Lands



Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

- *Flathead Treaty*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*

Nez Perce Tribe of Idaho

Tribes and Bands
Nez Perce Tribe and bands.

Basis for Legal Status
Treaty with the Nez Perce Tribe, June 11, 1855; Nez Perce Treaty, June 9, 1863; Act, March 3, 1863; Treaty with Nez Perce Tribe, August 13, 1868; Agreement with Nez Perce, May 1, 1893; Proclamation, February 8, 1887; Proclamation, November 8, 1895; Act of Congress, February 6, 1909.

Basis for Off-Reservation Interests/Rights
(inherent sovereignty, socio-economic well-being on their reservation and reserved rights) Treaty with the Nez Perce of 1855, Article 3: "The exclusive right of taking fish in all the streams where running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places in common with citizens of the Territory; and of erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land." Treaty with the Nez Perce of 1863, Article 8: "The United States also agree to reserve all springs or fountains not adjacent to, or directly connected with, the streams or rivers within the lands hereby relinquished, and to keep back from settlement or entry so much of the surrounding land as may be necessary to prevent the said springs or fountains being enclosed; and, further, to preserve a perpetual right of way to and from the same, as watering places, for the use in common of both whites and Indians."

Relevant Federal Court Decisions
(Nez Perce as party to case) *Oregon v. Green. Nance v. E.P.A.* 645 F.2d 701 (9th Cir. 1981) and *Northern Cheyenne Tribe v. Hodel* 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have trust obligations when their actions may adversely affect the water quality/quantity, air quality, or property of Indian reservations.

State Cases
State v. Arthur, 261 P.2d 135, 74 Idaho 251; *State v. McConville.*

Land Base
Pre-treaty: 13 million acres in central Idaho, northeastern Oregon, and southeastern Washington; June 9, 1855: Reservation established encompassing 7.7 million acres; 1858: Allotted 180,270 acres–2,170 acres reserved for church and cemetery, and 32,020 acres for a timberland reserve; June 9, 1863: Relinquish reservation and re-establish one with 780,000 acres in western Idaho between Snake and Clearwater Rivers; May 1, 1893: Ceded and sold to U.S. Government all unallotted lands on the reservation with exception of "the boom"; today's reservation: 750,000 acres; approximately 90,000 acres owned by the Tribe.

Tribal Headquarters
Nez Perce Tribe; Beavergrade Road and Main, Lapwai, Idaho 83540; Phone: 208-843-2253; Office hours: M-F, 8:00am–4:00pm.

Tribal Population
Pre-treaty: 7,000 [est.]; 1995: 3,170 enrolled members.

Cultural Affiliation
Plateau Cultural Region.

Religions
Christian denominations, Seven Drums, and Indian Shaker.

Languages
English and Sahaptian: Nez Perce language dialects.

Governance
Rejected Indian Reorganization Act in 1935 by tribal referendum. Established 9 member Nez Perce Executive Council under a Constitution with By-laws in 1927; concentrated authority under a 1948 Constitution, which was adopted in 1948 (revised in 1961). The tribe is self-governing.

Pre-Treaty Economy
Hunting, fishing, and gathering; trade from Great Plains areas westward down the Columbia River; horse breeding.

Tribal Enterprises
Tribal convenience stores: Nez Perce Express I and II; Nez Perce Forest Products Enterprises; Nez Perce Limestone Enterprises; Nez Perce Clearwater Casino.

Tribal Private Sector
Farming; ranching; fishing; Appaloosa horse breeding; arts and crafts; retail trade; and other commercial services; The Nez Perce Express; Fireworks & Tobacco Sales.

Museum
Nez Perce National Historical Park Visitor Center (11 miles east of Lewiston, Idaho); Franklin C. Walker, Park Superintendent; Highway 95, Spalding, Idaho 83551; Phone: 208-843-2261.

Tribal Newspaper
Tots Tatoken, P.O. Box 365, Lapwai, ID 83540; Phone: 208-843-7375. Published monthly.

Tribal Programs (off-reservation involvement)
Cultural Resources; Salmon Youth Corps.; Fisheries; Environmental Protection; Water Quality/ Quantity Restoration.

Tribal Fisheries
Clearwater Forks, Grande Ronde, Imnaha, Payette, Powder, Rapid, Salmon, Lower Snake, Lochsa Selway, North Fork Salmon, and Columbia Rivers. This is to be understood to include all those tributaries and water bodies originating on the reservation and fisheries in the tribes area of interest, and all the tribe's usual and accustomed fishing grounds and stations.

Tribal Contact
Allen Pinkham; P.O. Box 365, Lapwai, Idaho 83504; Phone: 208-843-2253; Fax: 208-843-7371. DG–A.Pinkham:R01F05A.

Agency Contact
Elliot Moffet, Superintendent, Northern Idaho Agency, BIA; P.O. Drawer 277, Lapwai, ID 83540-0277; Phone: 208-843-2300; Fax: 208:843-7142.

Significant Events and Dates
Socio-cultural: There are a number of socio-cultural events (for example, annual basketball tournament, Root and Salmon Feasts, Pow Wow dances) and unanticipated events (funerals, memorials, illnesses) that may obligate extended families during the year that could affect meeting schedules.

Government: The Nez Perce Tribal Executive Committee (NPTEC) meets on the 2nd and 4th Tuesdays of every month. The NPTEC subcommittees meet during the two weeks prior to the general meetings. The General Council of tribal members elects three of the nine members every year in the 1st full weekend in May. NPTEC elects its own officers each year after the General Council elections in May.

Executive Committee

Nez Perce Tribal Executive Committee, NPTEC; P.O. Box 305, Lapwai, ID 83540; Phone: 208-843-2253; Samuel N. Penney, Chairman; Wilfred A. Scott, Vice-Chairperson; Tonia Garcia, Secretary; Jaime A. Pinkham, Treasurer; Arthur Taylor, Jr., Assistant Secretary/Treasurer; Carla Higheagle, Chaplin; Members: Julie A. Davis, Della Wheeler Cree, Del T. White.

General Council

Enrolled tribal members, 18 years of age or older, meet at least once a year to address tribal business and help provide direction to the General Council. The General Council meets two times annually to conduct elections and business. The Nez Perce constitution does not provide for special General Council meetings. The General Council elects its officers in September.

Spokane
Coeur d'Alene
Missoula
Yakima
Lewiston
Kennewick
The Dalles
Bend
Boise

Nez Perce Tribe
Map 1.
Area of Interest

Displayed interest area is subject to consultation with tribes.
Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

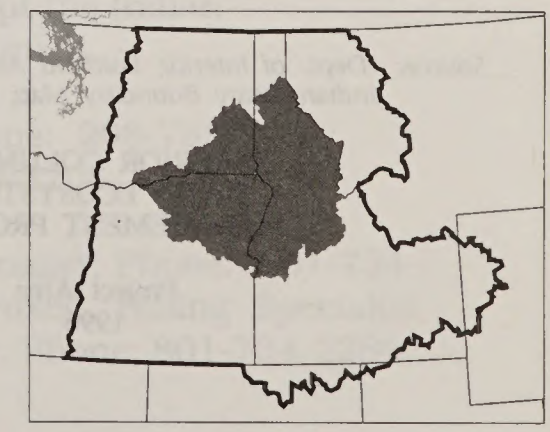
Project Area
1996

50 0 50 100 miles

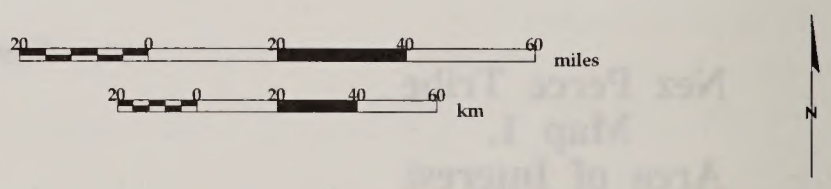
50 0 50 100 km

N

- *Nez Perce Tribe Area of Interest*
- *Nez Perce Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



Nez Perce Tribe
Map 2.
Ceded Lands

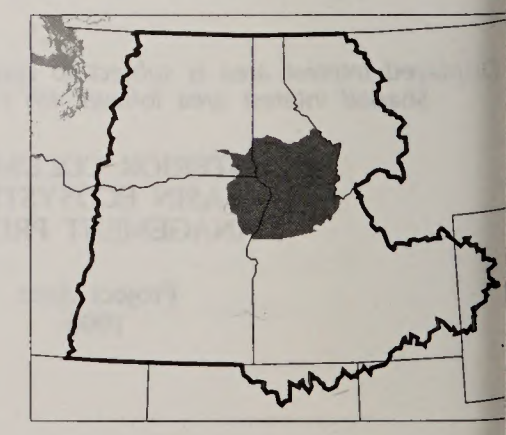


Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

- *Nez Perce Treaty*
- *Nez Perce Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



Northwestern Band of the Shoshoni Nation of Utah (Washakie)

Tribes and Bands

The subsistence range for some of the NW Shoshoni peoples, whose core homeland is in northern and western Utah, included the southeast corner of Idaho. Several bands signed the Box Elder Treaty of 1865, and by 1900, many resided on the Fort Hall Reservation. The NW Band of Shoshoni Indians and received recognition in 1980.

Basis for Legal Status

Treaty of Box Elder, June 30, 1863; Treaty with the Eastern Shoshoni, July 2, 1863; Treaty with the Eastern Band Shoshoni and Bannock, July 3, 1868; Act to Ratify an Agreement with the Eastern Shoshoni, September 26, 1872, ratified December 15, 1874; Act to Ratify an Agreement with the Shoshones, Bannocks, and Sheepeaters of the Fort Hall Reservation, May 14, 1880, ratified February 23, 1889; Act to Ratify an Agreement with the Shoshone and Bannock Tribes at Fort Hall, July 18, 1881, ratified on July 3, 1882.

Basis for Off-Reservation Interests/Rights

(inherent sovereignty, socio-economic well-being on their reservation) *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d 701 (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel*, 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have a trust obligation when their actions may adversely affect the water quality/quantity, air quality, or property of Indian reservations.

Land Base

In 1989 the L.D.S. church gave the Tribe 187 acres of land that constitutes the Tribe's reservation. Nearby there are additional lands held in trust by the Bureau of Indian Affairs.

Tribal Headquarters

NW Band of the Shoshoni Nation; 695 S. Main #6, Brigham, UT 84302; Phone: 801-734-2286; Fax: 801-734-0424.

Tribal Population

In 1996 there were 383 enrolled members in Idaho and Utah.

Religions

Traditional religions and Christian denominations.

Languages

Shoshone.

Governance

They have an approved constitution as August 24, 1987. They did not accept the Indian Reorganization Act of 1934. The Tribe has a self-governance form of government.

Administration in Blackfoot Office: Roderick Ariwite, Executive Director; Phone: 208-785-7401; Health: Jackie Edmo, CHR generalist; Phone: 208-785-7302. Fax: 208-785-2206.

Administration in Brigham City Office: Patty Timbimboo-Madsen, Office Manager; Phone: 801-734-2286; Vacant, Secretary/Receptionist; Phone: 801-734-2286. Robin Troxell, Billing Specialist (Health), Phone: 801-734-2286; Jon Warner, Chairman - Housing Authority, Phone: 801-734-2286.

Pre-Treaty Economy
Hunting, fishing, gathering, and trading.

Tribal Contact
Kenneth Timbana, Environmental Protection Specialist; 695 So. Main #6, Brigham City, UT 84302; Phone: 801-734-2286.

Agency Contact
Paul Nordwall, Forest Supervisor, Caribou National Forest; 250 S. 4th, Suite 282, Pocatello, ID 83201; Phone: 208-236-7500; Fax: 208-236-7503.

Significant Events and Dates
Government: The Tribal Council typically meets once a month. The Tribal Council elections are held in December. Officials are elected to four years; the Council elections are staggered with three positions being filled one year and four positions being filled the following year. This was last done in December 1993 and 1994.

Tribal Council
NW Band of the Shoshoni Nation: vacant, Chairman; Tommy Pacheco, Vice-Chairman and Acting Chairman; Council members: Ivan Wongon, Secretary; Elva Schramm; Leland Pubigee; Sandra Heaton; Wallace Zundel.

General Council
Enrolled tribal members, 18 years of age or older, meet at least once a year to address tribal business and help provide direction to the Tribal Council.

NW Band of the Shoshoni Nation
Map 2.
Treaty Aboriginal Lands

Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

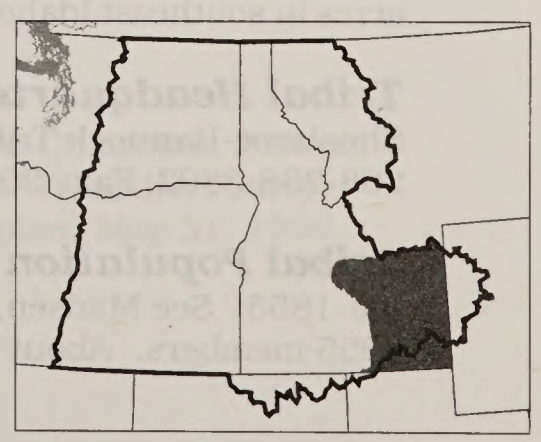
Project Area
1996

20 0 20 40 60 miles

20 0 20 40 60 km

N

- *Fort Bridger Treaty (shown within EIS area only)*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*
- *NW Shoshoni Tribal Headquarters*



Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho

Tribes and Bands

The Shoshone-Bannock Tribes compose one federally recognized tribe that includes two distinct groups, the Northern, or Snake River Shoshone, and the Bannocks. The four Northern Shoshone Band divisions include the Western Shoshone (Warraeekas) including the Boise and Bruneas; the Mountain Lemhi Shoshone including the Tukuerukas (Sheepeaters) and the Agaidikas (Salmon eaters); the Northwestern Shoshone including the Bear Lakes, Cache Valley, Bannock Creek and Weber Ute; the Pohogue (Fort Hall) Shoshone.

Basis for Legal Status

Treaty with the Eastern Shoshoni Tribe, 1863; Treaty with the Eastern Band of Shoshoni and Bannocks, 1868 at Fort Bridger; Act to Ratify an Agreement, 1874; Act to Ratify an Agreement, 1889; Act to Ratify an Agreement, 1882; Act to Ratify an Agreement, 1888; Act to Ratify an Agreement, 1889; Act to Ratify an Agreement, 1900.

Treaty with the Eastern Band Shoshoni and Bannock, 1868, Article 4: *". . .but they shall have the right to hunt on the unoccupied lands of the United States so long as game may be found thereon, and so long as peace subsists among the whites and Indians on the borders of the hunting districts."*

Agreement of February 5, 1898, ratified June 6, 1900, Article IV: *"As long as any of the lands ceded, granted, and relinquished under this treaty remain part of the public domain, Indians belonging to the above-mentioned tribes, and living on the reduced reservation, shall have the right, without any charge therefore, to cut timber for their own use, but not for sale, and to pasture their livestock on said public lands, and to hunt thereon and to fish in the streams thereof."*

Agreement Article VIII: *"The water from streams on that portion of the reservation now sold which is necessary for irrigation on land actually cultivated and in use shall be reserved for the Indians now using the same, so long as said Indians remain where they now live."*

Basis for Off-Reservation Interests/Rights

(Inherent sovereignty, socioeconomic well-being on their reservation.) Aboriginal rights reserved under the Fort Bridger Treaty of 1868; extended to unoccupied federal lands off-reservation in *State v. Tinno* (497 P.2d 1386; 1972. *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d 701 (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel*, 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have a trust obligation when their actions may adversely affect the water quality/quantity, air quality, or property of Indian reservations.

Relevant Federal Court Decisions

U.S. v. Shoshone Tribe, 304 U.S. 111 (1938).

Land Base

Pre-treaty: Unknown but extensive; Treaty reservation: 1.8 million acres; Today's reservation: 544,000 acres in southeast Idaho adjacent to Caribou National Forest. Fee land is less than 3 percent.

Tribal Headquarters

Shoshone-Bannock Tribes, Fort Hall Indian Reservation; P.O. Box 306, Fort Hall, ID 83203; Phone: 208-238-3802; Fax: 208-237-0797.

Tribal Population

Pre-1855: See Madsen, B.D., 1980. *The Northern Shoshoni*; Total enrollment: 1992: 3528; 1995: 3955 members. About 75 percent live on the reservation.

Religions
Native American Church, Traditional, and Christian denominations.

Languages
English, Shoshone, Bannock and 5-7 dialects in addition to family groups.

Governance
Traditional: See Madsen, B.D., 1980. *The Northern Shoshoni*; *Contemporary*: Fort Bridger Treaty of 1868; Constitution and By-laws, February 3, 1977; Land Use Ordinance; Big Game Code; Law and Order Code; aboriginal and inherent rights, customs, traditions, etc.

Pre-Treaty Economy
Trading and commercial harvesting. Buffalo were hunted on the Snake River plain of south Idaho until 1840. The Snake River was the focus of the Shoshoni-Bannock population, providing fishing, camas on the plains, pasture lands in the upper reaches, and good winter habitation locations in the bottoms. Salmon were available below Shoshone Falls on the Snake River, and trout, perch, and other fish were available throughout their territory. Grasses and edible roots were abundant in the higher elevations, and pine nuts were collected in northwest Utah.

Tribal Enterprises
The Shoshoni-Bannock tribes income derives from leases, mineral rights, and some agriculture. The tribes developed 30,000 acres of irrigated farmland in the 1930s. Tribal Industries include a Trading Post and Bannock Peak groceries; Cloth Horse; Tee Pee Gas; construction enterprise, a 1,500 acre farm and agricultural enterprise, an open-pit phosphate mine, and the 20,000 acre Fort Hall Irrigation Project. In 1991 the tribes negotiated the Fort Hall Water Rights Agreement with the State of Idaho and private parties concerning Snake River water rights. *Contact*: Enterprise Personnel Office, Economic Planners Office.

Tribal Newspaper
Sho-Ban News; Phone: 208-238-3701; Fax: 208-238-3802. Published once a week.

Tribal Programs (off-reservation involvement)
Cultural Resources; Fisheries; Fish and Game and Law enforcement.

Tribal Fisheries
Snake, Blackfoot, and Portneuf Rivers; Spring Creek and Fort Hall River.

Tribal Contact
Shaun Robertson, Environmental/Rights Protection Coordinator; P.O. Box 306, Fort Hall, ID 83203; Phone: 208-238-3758; Fax: 208-238-3742.

Agency Contact
Dennis Whiteman, Superintendent, BIA; Phone: 208-238-2301/02; Fax: 208-237-0466.

Significant Events and Dates
Socio-cultural: August: Shoshone-Bannock Indian Festival, Fort Hall, Idaho; April 20-22: Gathering of the Nations Pow Wow; Albuquerque, NM.

Fort Hall Business Council
The Shoshone-Bannock Tribes: Delbert Farmer, Chairman; Keith Tinno, Vice-Chairman; Billie A. Appenay, Administrative Secretary; Mary Washakie, Secretary; Loretta Edmo, Treasurer; Larry Bagley, Sergeant at Arms; Fredrick Auck; Claudeo Broncho. Elections took place May 31, 1996. Swearing in was approximately June 11, 1996.

Butte
Boise
Idaho Falls
Logan
Ogden

Shoshone-Bannock Tribes (Fort Hall Reservation) Map 1. Area of Interest

Displayed interest area is subject to consultation with tribes. Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

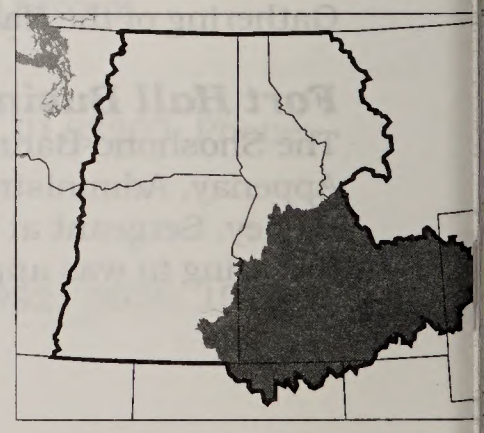
Project Area
1996

50 0 50 100 miles

50 0 50 100 km

N

- *Shoshone-Bannock Tribes Area of Interest*
- *Fort Hall Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*

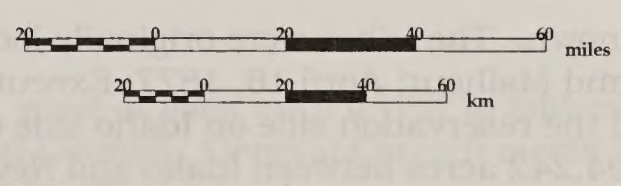


Shoshone-Bannock Tribes (Fort Hall Reservation) Map 2. Treaty Aboriginal Lands

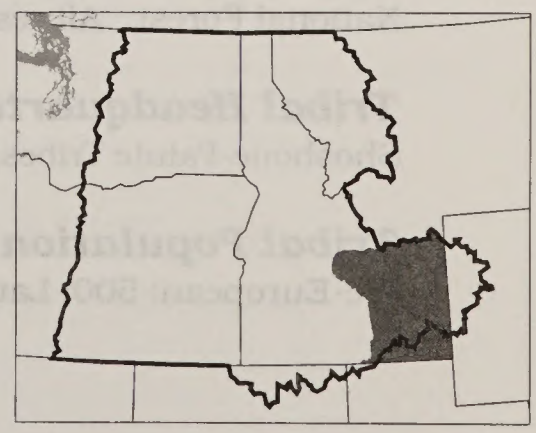
Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996



- *Fort Bridger Treaty (shown within EIS area only)*
- *Fort Hall Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



Shoshone-Paiute Tribes of the Duck Valley Reservation, Nevada

Tribes and Bands

Western Shoshone, Northern Paiute, and Northern Shoshone/Bannock.

Basis for Legal Status

Executive Order of April 16, 1877 set aside the Duck Valley Reservation for several Western Shoshoni bands who traditionally lived along the Owyhee River of southeastern Oregon, southwestern Idaho, and the Humboldt River of northeastern Nevada. Later they were joined by Paiute from the lower Weiser country of Idaho and independent Northern Paiutes from Fort McDermitt, Camp Harney, and Quinn River areas and from the Owyhee region of southwestern Idaho, and both settled on the reservation to take up farming and ranching. The reservation was expanded on the north side by an Executive Order in 1886 to a half million acres to include a Northern Paiute group (Paddy Cap's Band), who arrived in 1884 released from the Yakama Reservation.

The creation and subsequent expansion of the Duck Valley Indian Reservation relocated bands of Northern Paiute, Northern Shoshone and Bannock people. All available anthropological and historical literature indicates that the Northern Paiute and Northern Shoshone/Bannock groups, in varying degrees of admixture, were the primary aboriginal inhabitants of this region (ie. prior to the disturbances associated with EuroAmerican contact), with the Western Shoshone primarily inhabiting the Humboldt River drainage. The core subsistence areas of the the Northern Paiute/ Northern Shoshone-Bannock and the Western Shoshone were separated by the high ground dividing the Snake and Humboldt river drainage. Formerly each group travelled throughout different, yet overlapping regions. Most if not all enrolled tribal members have ancestors in more than one of the aboriginal groups, and many individuals are multilingual. Individuals therefore, normally maintained interests in the territories of more than one group. The aboriginal Northern Paiute territory includes portions of southwestern Idaho, eastern Oregon, and northwestern Nevada. Nevertheless, the aboriginal Northern Shoshone-Bannock territory includes mainly southern Idaho; the aboriginal Western Shoshone territory includes mainly northern Nevada.

Basis for Off-Reservation Interests/Rights

(inherent sovereignty, socio-economic well-being on their reservation) *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel* 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have trust obligations when their actions may adversely affect water quality/quantity, air quality, or property of Indian reservations.

Land Base

Pre-treaty: Unknown. The tribes were originally located on three reservations: Walker River, Pyramid Lake, and Malheur; April 16, 1877: Executive Order Reservation: 150,000 acres [est.]; 1886: Increased the reservation side on Idaho side due to the arrival of Paddy Cap's band. Reservation: 294,242 acres between Idaho and Nevada state lines and adjacent to Humboldt National Forest. All reservation lands are tribal properties and contiguous in a square block.

Tribal Headquarters

Shoshone-Paiute Tribes; P.O. Box 219, Owyhee, NV 89832; Phone: 702-757-3211; Fax: 702-757-2219.

Tribal Population

Pre-European: 500; Late 1800s: 1000s; 1992: 1700.

Cultural Affiliation
Great Basin Language: Dialects of Paiute, Shoshonean, and English.

Religions
Traditional beliefs and Christian denominations.

Governance
The Tribe adopted a Constitution in 1936 in conformance with the Indian Reorganization Act 1934. The Tribe is one of the original 17 tribes that sought self-governance.

Pre-Treaty Economy
Hunting, fishing, and harvesting grass and seed.

Tribal Enterprises
Rec Hall Cafe; The principal sources of revenue are farming and ranching. Other business establishments include a motel, general store, laundromat, and service station. The main source of income is the selling of permits to anglers at the two reservoirs. Business leases, land leases, and grazing permits also provide income to the tribe.

Tribal Programs (off-reservation involvement)
Department of Natural Resources; Heritage Preservation (cultural resources).

Tribal Contact
Herman Atkins, Administrator; Phone: 702-757-3211. Terry Gibson, Director; Phone: 702-757-3211.

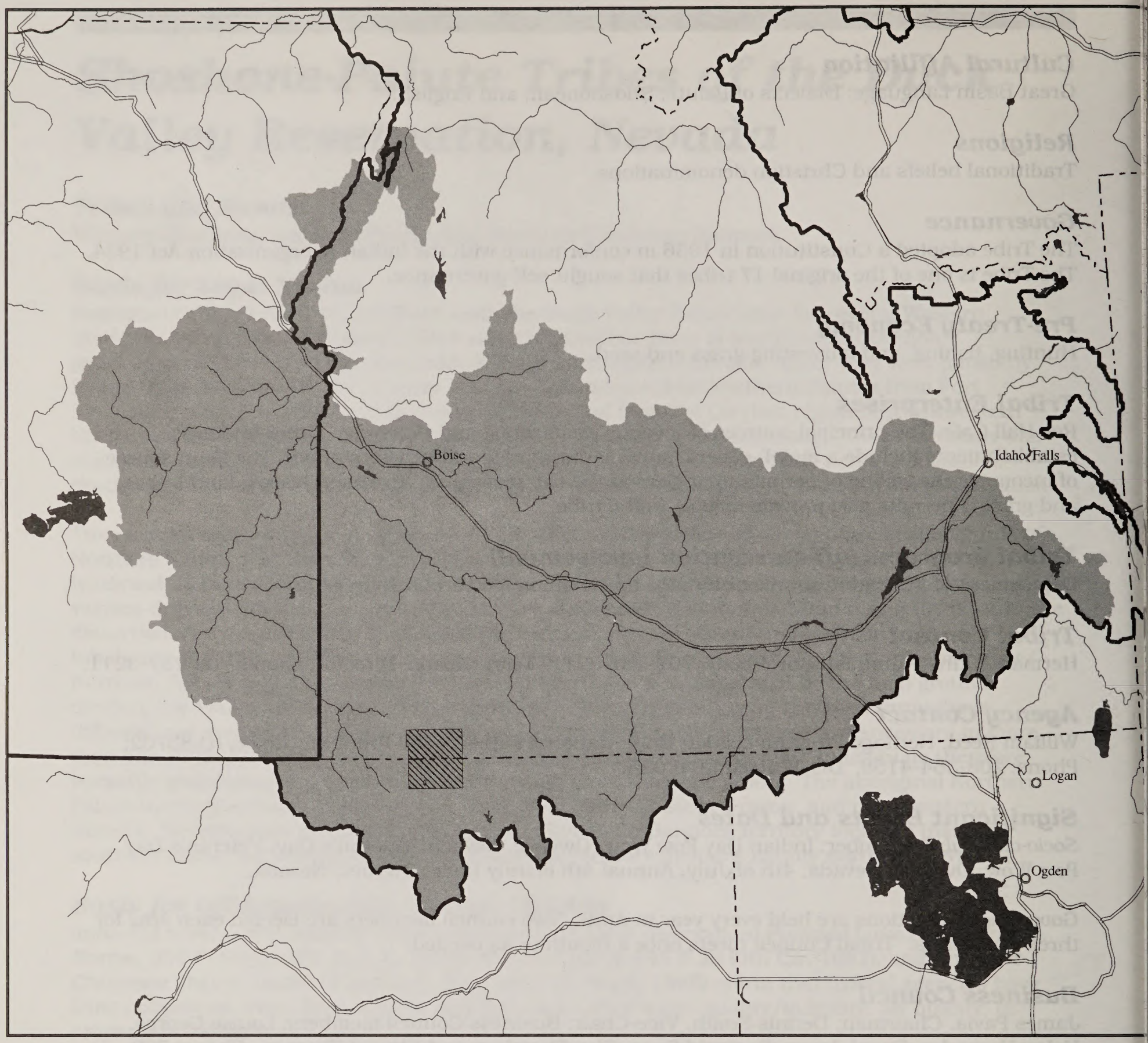
Agency Contact
William Reed, Heritage Program Leader; Boise National Forest; 1750 Front St., Boise, ID 83702; Phone: 208-364-4158. DG–W.Reed:R04F02A.

Significant Events and Dates
Socio-cultural: September: Indian Day Pow Wow, Owyhee, Nevada; Veteran's Day, Veteran's Day Pow Wow, Owyhee, Nevada; 4th of July, Annual 4th of July Rode, Owyhee, Nevada.

Government: Elections are held every year in April. Two council members are elected each year for three year terms. Tribal Council meets once a month or as needed.

Business Council
James Pavia, Chairman; Dennis Smith, Vice-Chair; Business Council members: Louise George, Helen Hernadez, David Jones, Reginald Soap, Eloy Thatcher, and Elwood Thomas. Phone: 702-757-3211; Fax: 702-757-2219.

General Council
Enrolled tribal members, 18 years of age or older, meet at least once a year to address tribal business and help provide direction to the General Council. General Council meets at least once a year and may have special meetings as warranted by tribal issues.



Shoshone-Paiute Tribes (Duck Valley Reservation) Map 1. Area of Interest

Displayed interest area is subject to consultation with tribes. Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

50 0 50 100 miles

50 0 50 100 km

N

- *Shoshone-Paiute Tribes Area of Interest*
- *Duck Valley Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*

The Spokane Tribe of the Spokane Reservation, Washington

Tribes and Bands
Upper Spokane (Snxwemi'ne: people of the steelhead trout place); Middle Spokane (Sqasi'lni: fishers, after a village name); Lower Spokane (Sineka'lt: rapids, after a village name) and Chewelah groups.

Basis for Legal Status
(inherent sovereignty) Executive Order of January 18, 1881; Agreement, March 18, 1887; Act, June 20, 1940.

Basis for Off-Reservation Interests/Rights
(inherent sovereignty, socio-economic well-being on their reservation) *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d 701 (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel*, 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have a trust obligation when their actions may adversely affect the water quality/quantity, air quality, or property of Indian reservations.

Land Base
Pre-treaty: 153,600, unallotted acres; today: 137,002 total acres: (102,441 acres owned by Tribe, 34,522 acres allotted, 38 acres government owned); 1881: Spokane Indian Reservation established in northeast Washington by Executive Order; 1887: The Spokane gave up title to all land outside of the reservation in Idaho and Washington Territories and agreed to move to the Coeur d'Alene Reservation; 1940: Land reclamation for construction of Grand Coulee Dam.

Tribal Headquarters
Spokane Tribe, The Alex Sherwood Memorial Center; P.O. Box 100, Wellpinit, WA 99040; Phone: 509-258-4581; Fax: 509-258-9243; Office Hours: M-F, 7:30am–4:00pm.

Tribal Population
Pre-treaty: 725; 1972: 58; 1995: 2,121.

Cultural Affiliation
Northern Plateau: Most closely affiliated with the Kalispel, Pend d'Oreilles, Sematuse, and Flathead/Salish.

Religions
Christian denominations, primarily Catholic.

Languages
English and Interior Salish.

Governance
A Constitution was approved in May 1951, establishing a Business Council of three elected tribal councilmen. On August 10, 1972, an amendment established a five member Business Council. Council members are elected to 3 year, 2 year, and 1 year terms. The tribe is self governing.

Pre-Treaty Economy
Fishing, hunting, and gathering was based on a subsistence economy with established local and regional trade networks.

Tribal Enterprises
Spokane Indian Reservation Timber Enterprise; Southwest Region Recreational Resort Project; Tribal Trading Post; Spokane Tribal Fish Hatchery; Spokane Tribal Wood Products; McCoy's Marina; Eagle Feather Sawmill; Spokane Tribal Gaming Commission; Two Rivers Casino.

Tribal Private Sector
Lil Chief's Casino Ford; Double Eagle Casino.

Museum
A museum is planned at the Pow Wow grounds off the Sherwood Loop Road on the reservation. It will be called the Spokane Tribe Cultural Learning Center.

Tribal Newspaper
The Rawhide Press; P.O. Box 100, Wellpinit, WA 99040; Phone: 509-258-775. Published monthly by the Tribe and printed by Garland Press in Spokane, Washington.

Tribal Programs (off-reservation involvement)
Spokane Tribal Fish Hatchery and cultural resources program.

Special Environmental Designations
Spokane reservation was designated Class 1 airshed at the request of the tribe, approved and regulated by EPA.

Tribal Fisheries
Spokane, Little Spokane, and Columbia Rivers; Chamokane Creek.

Tribal Contact
Mary Verner, Natural Resource Coordinator; Phone: 509-258-9042; Fax: 509-258-9243.

Agency Contact
Bob Gilrein, Acting Superintendent of Spokane Agency, BIA; P.O. Box 389, Wellpinit, WA 99040-0389; Phone: 509-258-4561; Fax: 509-258-7542.

Significant Events and Dates
Socio-cultural: August 25-27, 1995, 6th Annual Spokane Falls Northwest Indian Encampment and Pow Wow; August 31-September 4: Spokane Indian Days Pow Wow are examples of social events well attended by the tribe. These and other unanticipated events such as funerals, illnesses, and memorials may affect tribal meeting schedules especially if they involve extended family obligations.

Government: Elections took place June 1, 1996. Normally, Council reorganization would take place within 10 days after an election unless interrupted by the 4th of July celebrations as in 1995. The Business Council's five members are elected to 3 year terms by the General Council. General Council members are elected for 2 year terms.

Business Council
Bruce Wynne, Chairman; John Keiffer, Vice-Chairman; David Wynecoop, Secretary; Council members: Alfred Peone, Jim Sijohn.

General Council
Enrolled tribal members, 18 years of age or older, meet at least once a year to address tribal business and help provide direction to the General Council. The General Council meets quarterly, but may have special sessions held periodically throughout the year to address tribal business. The General Council can override the Business Council decisions.

Committees, Boards and Commissions
Education; Housing; Tribal Employment Rights Office; Tribal Finance; Senior Citizen; SIRTP Enterprise; Gaming Enterprise/bingo; Tribal Road Construction; Credit; Election; Wildfire; IRMP Steering; Indian Child Welfare.

Spokane

Coeur d'Alene

Yakima

Kennewick

20 0 20 40 miles

20 0 20 40 km

N

Spokane Tribe
Map 1.
Area of Interest

Displayed interest area is subject to consultation with tribes.
Shaded interest area follows 4th HUC boundaries.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

- *Spokane Tribe Area of Interest*
- *Spokane Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*

Spokane

Coeur d'Alene

Yakima

Kennewick

20 0 20 40 60 miles

20 0 20 40 60 km

N

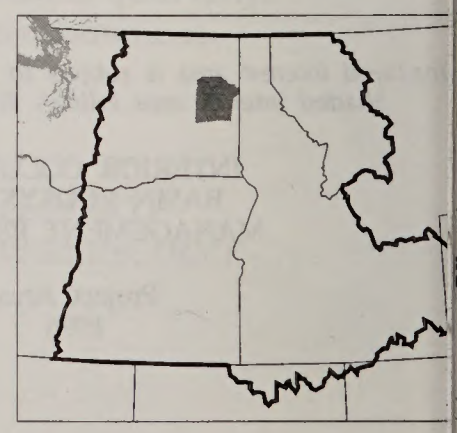
Spokane Tribe
Map 2.
Court of Claims

Source: Dept. of Interior, Portland Area BIA Jurisdiction, Indian Treaty Boundary Map, April, 1983.

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

- *Spokane Tribe Court of Claims*
- *Spokane Reservation*
- *Water*
- *Major Rivers*
- *Major Roads*
- *State Borders*
- *EIS Area Border*



Shoshone Tribe of the Wind River Reservation, Wyoming

Tribes and Bands
Eastern Shoshone of the Shoshoni Tribe and the Arapahoe Tribe.

Basis for Legal Status
The Treaty with the Eastern Band of Shoshone and Bannock Tribes, 1868; The ratified Agreement with the Eastern Band of Shoshoni of September 26, 1872; An Executive Order 1887 established Fort Washakie; An Agreement 1896 ceded all rights and interest in the Big Horn Hot Springs area (about 1 square mile); An Executive Order 1906, General Orders 191 removed the 8th Calvary, abolished the Wind River Military Reservation, and returned the land to the jurisdiction of the Department the Interior.

Basis for Off-Reservation Interests/Rights
(inherent sovereignty, socioeconomic well-being on their reservation and reserved rights) The Eastern Band Shoshoni and Bannock, 1868, Article 4: *". . . but they shall have the right to hunt on the unoccupied lands of the United States so long as game may be found thereon, and so long as peace persists among the whites and Indians on the borders of the hunting districts."*

Relevant Federal Court Decisions
(Wind River Shoshone party to case) *United States v. Cutler*, 37 F. Supp. 725 (1941). *Pyramid Lake Paiute Tribe v. Morton*, 354 F. Supp. 252 (D.D.C. 1973), *Nance v. E.P.A.* 645 F.2d 701 (9th Cir. 1981), and *Northern Cheyenne Tribe v. Hodel*, 12 Indian L. Rep. 3065 (D. Mont. 1985) affirm that federal agencies have a trust obligation when their actions may adversely affect the water quality/quantity, air quality, or property of Indian reservations.

Land Base
Through the July 2, 1863 Fort Bridger Treaty a 44,672,000 acres reservation was established that encompassed parts of Colorado, Utah, Idaho, Montana, and Wyoming. The second Treaty of Fort Bridger of July 3, 1868 established the reservation in its current location at 3, 054,182 acres. In 1938 the Shoshone Tribe awarded monetary compensation for one half undivided interest of the reservation largely occupied by the Arapahoe Tribe, based on a 1938 federal court judgement. Today's reservation is approximately 2.2 million acres.

Tribal Headquarters
Eastern Shoshone Tribe; P.O. Box 538, Fort Washakie, WY 82514; Phone: 307-332-3532; Fax: 307-332-3055; Office hours: M-F, 8:00am – 4:45pm.

Tribal Population
1995: 3,024 Shoshone and 6,012 Arapahoe enrollment.

Cultural Affiliation
Great Basin.

Religions
Christianity, Traditional beliefs, and Sun Dance.

Languages
English, Shoshoni, and Arapahoe.

Governance
The Shoshone Tribe is self-governing. Resource use is regulated by customs, traditions, codes, and ordinances. Both tribes have a Business Council. Both councils make up the Joint Business Council.

Pre-Treaty Economy
Hunting, fishing, gathering, and trade network with Great Basin and Plains tribes.

Tribal Enterprises
Oil and gas revenue is a major basis of the tribal economy; R.V. Greeves Art Gallery; Warm Valley Arts and Crafts; Shoshone Tribal Services.

Reservation Education Institutions
Saint Stephen's Indian School; Wyoming Indian Elementary School; Wyoming Indian High School; Fort Washakie Elementary School.

Museums
Eastern Shoshone Cultural and Resource Center, Building 31 (White House), Fort Washakie, Wyoming; Phone: 307-332-9106; Open year-round, M-F, 9:00am–4:00pm.

St. Steven's Indian Mission, The Center for Native Arts and Humanities; 30 St. Stevens Road, 3.5 miles south of Riverton, Wyoming; Director, Bob Spoonhunter; Phone: 307-856-8664; Opens May 1996; M-F, 9:00am–4:00pm.

Tribal Newspaper
Wind River Journal, Jan Meeks, circulation; P.O. Box 900, Lander, WY 82520; Phone: 307-332-2323 or 800-656-8762; Fax: 307-332-9332. Published weekly.

Tribal Programs (off-reservation involvement)
Cultural Resources; Shoshone Tribal Fish and Game.

Primary Tribal Fisheries
Wind River.

Tribal Contact
Ivan Posey, Tribal Council member; Phone: 307-332-3532.

Tribal Representatives
Medicine Wheel Alliance/Associated; P.O. Box 776, Fort Washakie, WY 82514; Phone: 307-332-7436; Fax: 307-332-3055; This Northern and Eastern Shoshone group has acted as mediators for tribal interest to the Forest Service.

Agency Contact
Perry Baker, Superintendent, Wind River Agency, BIA; Shoshone and Arapaho Tribes, Fort Washakie, WY 82514; M-F, 8:00am–4:45pm; Phone: 307-332-7810; Fax: 307-332-4578.

Significant Events and Dates
Socio-cultural: Treaty Day Recognition and Shoshone Indian Days Rodeo and Pow Wow in June and the Shoshone-Bannock Indian Festival in August are some of the summer events well attended by the Shoshone Tribe. Events usually begin on Fridays and last over the weekend. Unanticipated events that may obligate extended family involvement, such as funerals and illnesses, could impact tribal meeting schedules.

Government: The Shoshone Business Council members are elected every 2 years for a two year term by the enrolled Shoshone General Council. The joint Shoshone-Arapahoe Business Council is comprised of 12 members and together review federal agencies' policies. Special General Council meetings may be held periodically to address tribal business.

Shoshone Business Council

John Washakie, Chairman; Vernon Hill, Co-Chair; Ivan Posey, Mike Lajuenesse, Alfred McAdams Jr., John Wadda.

Tribal Committees and Commissions

Culture Board; Fish and Wildlife; Environmental Quality Commission, Tribal Water Engineers, Oil and Gas Commission.

Chronology of Legal Status of American Indian Tribes

Introduction

This paper shows the evolution of the legal status and involvement of American Indian Tribes in the planning and decision making process for resource decisions on lands administered by the Bureau of Land Management and the Forest Service. It lists the appropriate laws, executive orders and other key legal concepts that provide the present national policy and direction. Selected Treaties and Agreements that recognize off-reservation rights and interests of the affected ICBEMP tribes are also included. (See also the Introduction to the General Information Sheet section of Appendix C.)

1500s. Spain's Francisco de Victoria advised that since "Indians" had title or right to the land, their consent was required before lands could be taken. De Victoria's position was widely accepted by 16th, 17th, and 18th century authorities on international law.

Pre-Constitutional. Prior to the U.S. Constitution, other countries, except England, signed treaties with Indian nations. The British Crown issued doctrines describing the relationship it held with Indian nations as a political relationship. The King of England further defined areas west of the Appalachians as Indian territory. England recognized Indian tribes as sovereign nations.

The Courts have established that discovery gave European colonial powers fee simple ownership of the domain they discovered, subject to the Indians' right of occupancy and use or "Indian title." This fee title passed to the United States on independence subject to treaty rights or conditions reserved by or for the Indians and by subsequent actions by Congress or the Executive to abrogate or condition treaties, laws, and agreements.

Aboriginal Rights. Aboriginal rights were based on aboriginal title, original title, or Indian title which is the possessory right to occupy and use the area of land that they had traditionally used. Such rights or title could be extinguished by Congress at will through treaty or other actions. Individual aboriginal rights were based on continuous actual possession by occupancy, inclosure, or other actions establishing a right to the land to the exclusion of adverse claimants. As to National Forest lands, such possession must predate the establishment of the National Forest.

1787 ~ Northwest Ordinance. Once lands northwest of the Ohio River were opened for settlement, the Continental Congress passed the Northwest Ordinance (1 Stat 51), in part to have at hand, some representation of law and order as settlers encountered Indian nations. It gave recognition of sovereignty to tribal groups and stipulated that only the Federal Government could negotiate treaties for cession of lands.

1789 ~ U.S. Constitution. Acknowledged sovereign rights of Indian nations.
Although Indians are specifically mentioned three times in the Constitution, the main source of federal authority over Indians is the Commerce Clause. Under it, Congress is authorized to "regulate commerce with foreign Nations, and among the States, and with the Indian Tribes." The Commerce Clause, Treaty Clause, and Supremacy Clause, have been determined by the courts to be the primary basis for the national government's exclusive authority to provide for the management of Indian matters. The specific Clauses pertaining to Indians follow:

Article 1, Section 8, Clause 3: Power under Commerce Clause was limited to recognized tribes. Congress "shall have the power to regulate Commerce with . . . the Indian Tribes."
Article 1 and 14th Amendment: Indians were not to be taxed.

Article 2, Section 2, Clause 2, The Treaty Clause: ". . . the president shall have the power to make treaties, provided two-thirds of the senators present concur . . ." This was the principal foundation for federal power over Indians.
Article 1, Section 8 Clauses 1, 11, 12, 15-17: At least during the first century of U.S. national existence, national defense powers of the Constitution provided for administration of Indian affairs. During this period Indian affairs were more of a military and foreign policy matter than a matter to be handled under domestic or municipal laws.
Article 4, Section 3, Clause 2, The Property Clause: The Property Clause states: "The Congress shall have power to dispose of and make all needful Rules and Regulations respecting the Territory or Property belonging to the United States; and nothing in this Constitution shall be so construed as to prejudice any claims of the United States, or of any particular State." The Property Clause has been considered as an additional source of authority over Indian affairs with power over U.S. property exclusively committed to Congress. Under this Clause, executive order reservations have been sustained on the basis of the longstanding acquiescence of Congress in this matter. An historical argument has been made that technically, since lands held under "Indian title" were also "property of the U.S.," they were subject to the Property Clause. Public lands owned by the U.S. are administered by the federal agencies under the Property Clause for public purposes. These federal lands are distinct from lands held by the U.S. in trust for the benefit of the Native American Indians.
Article 6, Clause 2: "This Constitution and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or shall be made, under the Authority of the Unites States, shall be the Supreme Law of the Land; and Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding." This clause confirmed that states of the union have no jurisdiction over Indian nations or their treaties.

Laws and Treaties

Non-Intercourse Act of 1790. Gave the Federal Government authority over Indian matters and provided a foundation for U.S. Indian policy.

1803 ~ Treaty with France for Louisiana Purchase. Ceded the Mississippi drainage to the U.S. bringing the territory and its inhabitants under U.S. rule and protection.

1814 ~ Treaty of Peace and Amity. Commonly referred to as the Treaty of Ghent, this treaty was between the United States and Great Britain. A provision of the treaty, in response to Great Britain's pressure to have rights restored to its allies during the War of 1812, pledges the United States government to restore to such American Indian Nations all the possessions, rights and privileges that they enjoyed or were entitled to before the war. In addition, both treaty nations transferred the role of guardian to all Indian Nations while acknowledging all aboriginal rights to use of land, sea and air in the New World. The treaty also excluded non-Indians from Indian territories until and unless the United States had secured the land from the Indians by valid, just and humane treaties. In sum, Great Britain served its duty as a guardian of American Indian Nations it was responsible to by securing a promise from the United States to assume the same guardian/protective relationship.

1823–1831; Marshall Trilogy

1) *Discovery Doctrine* stated that only the Federal Government has preemptive right to procure Indian land.
2) *Trust Responsibility* of the Federal Government meant that Indian tribes as sovereign, domestic dependent nations rely on the US government for protection of their interests and have no power to make treaties with foreign nations.
3) *Supremacy Clause* stated that treaties take precedence over state laws.

1830 ~ Indian Removal Act, (4 Stat. 411; 25 U.S.C. S 174). Enabled the President to negotiate with tribes east of the Mississippi. The act formally established the removal policy of exchanging

federal lands west of the Mississippi for lands held by Indian Tribes in the east. The act required the exchanges be voluntary, payment be made to individuals for relinquished property improvements and guarantees made for suitable new homes.

1830 ~ Treaty of Dancing Rabbit Creek. Dissolved tribal territory and assimilated Indian peoples into U.S. society.

1831 ~ Government-Tribal Relationship. Chief Justice John Marshall observed in *Cherokee Nation v. Georgia, 30 U.S. (5 pet.) 711 (1831),* "the condition of the Indians in relation to the United States is perhaps unlike that of any other two people in existence . . . The relation of the Indians to the United States is marked by peculiar and cardinal distinctions that exist no where else." The Federal/tribal relationship is based upon broad but not unlimited federal constitutional power over Indian affairs, often described as "plenary." The relationship is also distinguished by special trust obligations requiring the United States (the President) to adhere to fiduciary standards in its dealings with Indians. The inherent tension between broad federal authority and special federal trust obligations has been instrumental in developing a unique body of law, generally referred to as Indian Law.

1834 ~ Indian Trade and Intercourse Act. Established treaty-making policy and the reservation system under the assertion that land and other property would not be taken from Indians without their consent. The Constitution gave Congress expressed power over Indiana tribes and provided a new definition of Indian country by recognizing American Indian "title" throughout most of the U.S. west of the Mississippi River. Gave the Federal Government authority over Indian matters and provided a foundation for U.S. Indian policy.

1846 ~ Treaty with Great Britain. Ceded Northwest Territory to the United States and brought its inhabitants under U.S. rule and protection.

1848 ~ Organic Act. Created the Oregon Territory. Extended the Northwest Ordinance's confirmation of Indian title to land in the new U.S. territory and recognized the treaty process, stating that lands not expressly ceded by ratified treaty constituted Indian country. This act also established the superintendent of Indian affairs position.

1848 ~ Treaty with Mexico. Ceded the southwest territory (including the homeland of the Shoshone tribe) who's American Indian nations were recognized by the United States as under the rule and protection of the Mexican government prior to the 1848. The treaty legally permitted the US government to protect this region and its residents from European intervention.

1850 ~ Act of June 5. Created a Treaty Commission and extended the Indian Trade and Intercourse Act to the Oregon Territory.

1850 ~ Oregon Donation Act. Contradicted the Act of June 5, 1850. Ultimately provided rights to land totaling 2.8 million acres to new settlers of the territory, beginning prior to the ratification of any treaties of land cession in the Pacific Northwest.

1853 ~ Act of March 2. Created the Washington Territory from part of the Oregon Territory, which extended the Donation Act and encouraged settlers to dispossess long established Indian communities.

1855 ~ June 9 Treaty with Yakama, (12 Stat. 951 et seq). The treaty applies to 14 bands and tribes now formally located on the Yakama and Colville Indian Reservations. Ratified and proclaimed in 1859. Treaty Article 3 in part states, "The exclusive right of taking fish in all the streams, where running through or bordering said reservation, is further secured to said confederated tribes and bands of Indians, as also the right of taking fish at all usual and accustomed places, in common with the citizens of the territory, and of erecting temporary buildings for curing them; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."

1855 ~ June 9 Treaty with Walla Walla, Cayuse, and Umatilla, (12 Stat. 945 et seq). Ratified and proclaimed in 1859. Treaty Article 1 states in part, "That the exclusive right of taking fish in the streams running through and bordering said reservation is hereby secured to said Indians, and at all other usual and accustomed stations in common with citizens of the United States, and of erecting suitable buildings for curing the same; the privilege of hunting, gathering roots and berries and pasturing their stock on unclaimed lands in common with citizens, is also secured to them."

1855 ~ June 11 Treaty with Nez Perce, (12 Stat. 957). The treaty was ratified and proclaimed by Congress in 1859. Article 3 in part states, "The exclusive right of taking fish in all the streams where running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places in common with citizens of the territory; and of erecting temporary buildings-for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."

1855 ~ June 25 Treaty with the Tribes of Middle Oregon, (14 Stat. 751). The treaty was ratified and proclaimed in 1867. Treaty Article 1 in part states, "That the exclusive right of taking fish in the streams running through and bordering said reservation is hereby secured to said Indians; and at all usual and accustomed stations, in common with citizens of the United States, and of erecting suitable houses for curing the same; also the privilege of hunting, gathering roots and berries, and pasturing their stock on unclaimed lands, in common with citizens, is secured to them."

1855 ~ July 16 Treaty with the Flatheads, Kootenais, and Upper Pend d'Oreilles, (12 Stat. 975). Ratified and proclaimed by Congress in 1859. Treaty Article 3 reads in part, "The exclusive right of taking fish in all the streams running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places, in common with citizens of the territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses an cattle upon open and unclaimed land."

1863 ~ Treaty with the Nez Perce, (14 Stat. 647). This treaty supplemented and in part amended the treaty of 1855 between the Nez Perce Tribe and the US government. Ratified and proclaimed in 1867. It pertains to those lands reserved for " use and occupation" of the tribe in the Nez Perce Treaty of 1855, which were in turn relinquished by the tribe to the Federal government through this 1863 treaty. Treaty Article 8... "The United States also agree to reserve all springs or fountains not adjacent to, or directly connected with, the streams or rivers within the lands hereby relinquished, and to keep back from settlement or entry so much of the surrounding land as may be necessary to prevent the said springs or fountains being enclosed; and, further, to preserve a perpetual right of way to and from the same, as watering places, for the use in common of both whites and Indians."

1864 ~ October 14 Treaty with the Klamaths, Moadocs, and Yahooskin Band of Snakes, (10 Stat. 707 et seq). In Article 1 of the treaty it states, "The exclusive right of taking fish in the streams and lakes, included in said reservation and of gathering edible roots, seeds, and berries with its limits, is hereby secured to the Indians." Federal recognition and the tribes' reservation were terminated in 1961. The courts determined that the rights to fish, hunt, and gather were not extinguished when the treaty and tribes were terminated." The reservation in large part became the eastern portion of the Winema National Forest, where reserved treaty rights continue to be exercised. Federal recognition of the tribes was restored in 1986.

1868 ~ Treaty with the Eastern Band of Shoshoni and Bannock, July 3, 1868 (15 Stat. 673). The treaty was ratified and proclaimed by congress in 1869. Treaty Article 4 ". . . but they shall have the right to hunt on the unoccupied lands of the United States so long as game may be found thereon, and so long as peace subsists among the whites and Indians on the borders of the hunting districts."

1868 ~ Treaty with the Nez Perces, (15 Stat. 693). This treaty in part amended the Nez Perces treaty of 1863. This treaty was ratified and proclaimed by Congress in 1869. It pertains to those

lands set apart for the exclusive use and benefit of the Nez Perces Tribe, which were ceded to the US government thereby diminishing the size of their reservation. Treaty Article 1 reads in part, "... and it is further agreed that those now residing outside of the boundaries of the reservation and who may continue to so reside shall be protected by the military authorities in their rights upon the allotments occupied by them, and also in the privilage of grazing their animals upon surrounding unoccupied lands."

1871 ~ Appropriation Act of May 3, 1871, (16 Stat.544, 566 and 25 U.S.C. S 71). The Appropriation Act's rider effectively ended the treaty era by withdrawing congressional appropriation funds to support the treaty making process. Subsequent tribal land cessions were accomplished by Agreements negotiated with tribes and approved by Congress.

1885 ~ Major Crimes Act. The act extended the criminal jurisdiction to Indian country.

1887 ~ General Allotment Act (Dawes Act), as amended. Led to dramatic reductions and elimination of some reservations. Provided for the allotment of lands to Indians on various reservations and public domain and extended the protection of laws of the United States and Territories over Indians. This was an attempt at assimilation by the cessation of Indian tribal holdings and relations: Indians were to be treated as individuals by dividing of lands to establish homes, by developing their lands, and becoming a part of American society. The Act also made the offer of U.S. citizenship to any individual applying for an allotment. Resulted in transfer of over 80 million acres of Indian lands into private ownership. The act was amended in 1910. In its section 31 of the amendment, it provided for lands to be allotted to American Indians found occupying, living on, or having improvements on National Forest land.

1891 ~ Agreement of 1891, Article 6. An Agreement between the Federal government and the Confederated Tribes of the Colville Reservation recognized tribal reserved right to water power and sources belonging to or connected with Indian allotments. Also, " ...the right to hunt and fish in common with all other persons on lands not allotted to said Indians shall not be taken away or otherwise abridged."

1892 ~ Intercourse Act of 1892. The act prohibited intrusions by non-Indians on Indian lands.

1897 ~ Organic Administrative Act of June 4, (30 Stat. 11, as amended; 16 U.S.C. 473 et seq). Secured "unoccupied" federal land for management by the Forest Service. This Act directed that National Forests shall be established only to improve and protect the forest therein, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for use and necessities of the citizens of the U.S. Also the Secretary of Agriculture was elected to make rules and establish such service as will assure the objects of the reservation, namely, to regulate their occupancy and use and preserve the forest thereon from destruction.

1898 ~ Agreement of February 5, 1898. Ratified July, 1900, this Agreement between the US government and Shoshone-Bannock Tribes of the Fort Hall Reservation ceded lands once apart of their reservation as provided by the 1868 Treaty at Fort Bridger. *Article 4* states, "As long as any of the lands ceded, granted, and relinquished under this treaty remain apart of the public domain, Indians belonging to the above-mentioned tribes, and living on the reduced reservation, shall have the right, without charge therefore, to cut timber for their own use, but not for sale, and to pasture their livestock on said public lands, and to hunt thereon and to fish in the streams thereof. *Article 8* states, "The water from streams...which is necessary for irrigating on land actually cultivated and in use shall be reserved for the Indians now using the same, so long as said Indians remain where they now live."

1906 ~ Antiquities Act of 1906, (34 Stat. 225 ;P.L.59- 209) as amended. Provided for the preservation and protection of federal land historic and archeological sites and artifacts. It was the precursor to the Archeological Resources Protection Act of 1979.

1908 ~ Winters Doctrine. Indian water rights defined by Federal law and water regulations must be sufficient to meet the purposes of the reservation. The doctrinealso stated that any ambiguity in interpretation of treaties must be resolved in the favor of the tribes.

1910 ~ Buy Indian Act, (36 Stat. 861; 25 U.S.C. 47; and C.431, section 23). Authorizes the Secretary of Interior to contract directly for employment of Indian labor and purchase products of Indian Industry. Indian owned businesses must be certified by the USDI Bureau of Indian affairs before they can compete with other Indian enterprises for Interior Department contracts. (The Competition in Contracting Act requires competition between like businesses.) If no Indian businesses are qualified for a contracting bid, the application process is opened to non-Indian enterprises.

1910 ~ Indian Allotments Act of June 25, (36 Stat. 855; 25 U.S.C.337). Authorized the Secretary of Interior to establish allotments within the national forests in conformance with the general allotment laws for any Indian person occupying, living on, or having improvements on land included within a national forest and not able to acquire an allotment by other usual allotment authorities. Grazing and agricultural uses of such land parcels were emphasized in the act.

1911 ~ The Weeks Law, (36 Stat. 961; P.L.61-435). Secured public lands at the consent of States for management by the Forest Service. Authorized and directed the Secretary of Agriculture to acquire forested, cut over, and denuded lands within watersheds of navigable streams that were necessary for the regulation of the flow of navigable streams or for timber production. Under this Act the lands were permanently reserved, held, and administered as National Forests.

1918 ~ Migratory Bird Treaty Act of July 3, (40 Stat. 755; P.L. 65-186, as ammended 16 U.S.C 703). Implemented the Migratory Bird Treaty of August 16, 1916 (39 Stat.1702, T.S. No. 628; 16 U.S.C. S 703 et seq) between the US government and Great Britain. The implications of this act concerning American Indian acquisition of bird parts for traditional use has been addressed in a some federal court cases, e.g. Supreme Court case Andrus v. Allard 444 U.S. 51 (1979).

1924 ~ Indian Citizen Act. Granted U.S. citizenship and voting privileges to Indian peoples.

1934 ~ Indian Reorganization Act, (25 U.S.C. 461 et seq). Encouraged tribes to organize themselves as governments and receive formal recognition from the Federal Government. Tribes could form corporations for their own economic development. Separate allotments were ended and the Secretary of Interior was given authority to acquire lands for Indians, inside or outside of reservations. The law is often referred to as IRA.

1937 ~ Bankhead-Jones Act, (50 Stat. 522; P.L 72-210). Authorized and directed the Secretary of Agriculture to develop a program of land conservation and utilization, correct maladjustments in land use to control soil erosion, reforestation, preserve natural resources, protect fish and wildlife, develop and protect recreation facilities, mitigate floods, conserve surface and subsurface moisture, protect watersheds of navigable streams, and protect public lands and public health and welfare.

1940 ~ Eagle Protection Act, (45 Stat. 1222; P.L. 70-770, as ammended 76 Stat. 1246, 86 Stat. 1064), Provided for the protection of eagles and made it unlawful to take, possess, sell, purchase, barter, offer to sell, purchase, barter, offer to sell, transport, export or import such birds or bird parts. The act was ammended in 1962. The implications of this act concerning American Indian acquisition of bird parts for traditional use has been addressed in a some federal court cases, e.g. Supreme Court case Andrus v. Allard 444 U.S. 51 (1979).

1944 ~ Sustained Yield Forest Management Act, (58 Stat. 132; P.L. 78-273). Provided authority to the Secretary of Agriculture and the Secretary of Interior to establish cooperative sustained units with private and other federal agencies in order to provide for a continuous and ample supply of forest products and to secure the benefits of forest in maintenance of water supply, regulation of stream flow, prevention of soil erosion, amelioration of climate, and preservation of wildlife. Under Section 7, trust or restricted Indian land, whether tribal or allotted, could be included in such units with the consent of the Indians concerned.

1946 ~ Indian Claims Commission Act. The Indian Claims Commission (ICC) was established in 1946 to resolve (1) claims in law or equity arising under the Constitution, laws, treaties of the United States, and executive orders of the President; (2) all other claims in law or equity, including torts; (3) claims which would result if treaties, contracts, and agreements between claimant and the United States were revised because of fraud, duress, unconscionable consideration, mutual or unilateral mistake, whether of law or fact; (4) claims arising from the taking by the United States, whether as the result of a treaty of cessation or otherwise, without payment of compensation agreed to by the claimant; (5) claims based upon fair and honorable dealings that are not recognized by any existing rule of law or equity.

A majority of the claims filed were land cases centered on the issue of whether adequate or any compensation had been paid when the Indians ceded territory to the United States or were forcibly removed. The rest of the claims were for government accountability, under the trust relationship, for mishandling, mismanagement, and misfeasance of tribal funds, for the most part directed at the Secretary of the Interior. Payment of compensation for land claims approved by the ICC extinguished aboriginal or Indian title to such lands. Rights and interest reserved by or for the Indians by treaty were not affected unless specifically identified in the ICC decision.

1952 ~ McCarran Amendment Act of July 10, (66 Stat. 549 ; 43 U.S.C. S 666). The act waives the sovereign immunity of the United States by permitting it to join in suits involving water rights of a river system or other [water] sources where the US government appears to be the owner or in the process of acquiring water rights. An important policy of the McCarran Amendment is to avoid piecemeal adjudication of water rights in a river system. The amendment has been interpreted in court to apply to both state and federal court case interests and encompass water rights, which the United States holds in trust for Indians and Tribes

1953 ~ House Concurrent Resolution No. 108 of 1953. The resolution stated National Policy, which led to the congressional termination acts of tribes.

1953 ~ Termination Act, (P.L. 83-280, as amended). The law was passed by congress in 1953. The termination policy enacted was actually implemented by a series of acts that terminated specific tribes from 1954 to 1967. During this time period a total of 109 federally recognized tribes and bands were terminated and their reservations dissolved. Associated Indian allotments and certain tribal rights were retained despite the termination process. The act significantly diminished tribal sovereignty in selected reservations and states, including California, Oregon and Washington. In 1968 the Termination Act was amended to require consent of a Indian nation before states could assume jurisdiction of Indian Reservations. Tribes were given the opportunity to terminate sovereignty; none have opted to do so.

1955 ~ Clean Air Act, (42 U.S.C.A.. S 7401-7642, as amended in 42 U.S.C.A. S 7474 (c)). The amendment to the act provided that only the tribal councils can redesignate Indian reservation lands to allow lower air quality. The EPA Administrator is allowed through 42 U.S.C.A. S 747(e) to resolve disputes between tribes and adjoining local governments. In 1978, the 1971 Code of Federal Regulation 40 C.F.R. S 52.21, which already provided the Clean Air act did not broaden authority over Indian reservations was amended by to give express recognition to Indian rights,(40 C.F.R. S 52.21, 1978).

1960 ~ Multiple Use Sustained Yield Act, (74 Stat. 215; P.L. 86-517). Confirmed the policy of the Congress that National Forests were established and administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes. Authorized and directed the Secretary of Agriculture to develop and administer the renewable resources for multiple use and sustained yield of services and products obtained therefrom. Authorized the Secretary of Agriculture to cooperate with interested state and local governmental agencies and others in the development and management of the National Forests.

1960 ~ Fish and Wildlife Conservation Act, (96 Stat. 1322; P.L. 96-366). Provided for coordination of the Departments of Interior and Agriculture in cooperation with states to develop,

plan, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game, including but not limited to specific habitat improvement projects and protection of threatened or endangered species.

1960 ~ Reservoir Salvage Act of 1960, (P.L. 86-523, as amended by P.L. 93-291). The act provide for consideration of cultural resources and archeological site protection from federal reservoir undertakings. The law helped form the basis for the National Historic Preservation Act of 1966.

1966 ~ National Historic Preservation Act, (P.L. 89-665, as amended by P.L. 91-423, P.L. 94-422, P.L. 94-458 and P.L. 96-515). Explicitly incorporated tribal involvement with the Section 106 Process and allowed for traditional properties without physical remains to be considered eligible for listing in the National Register of Historic Places. Several National Register Bulletins provide guidance for conformance with this act, i.e. Bulletin 38 dealing with Traditional Cultural Properties. The law is often referred to as NHPA and was last amended in 1992.

1966 ~ Tribal Federal Jurisdiction Act, (80 Stat. 880, 28 U.S.C. 1362). Permits tribes to take steps independent of the Federal government to protect and assert their constitutional, statutory, and treaty rights. Granted tribes treatment similar to that of the United States had it sued on their behalf.

1968 ~ Indian Civil Rights Act, (U.S.C. SS 1301 et seq/P.L. 90-284). Limited the power of tribal government by applying some of the language of the Bill of Rights to Indian Tribes, including the equal protection and due process clauses. There, however, is no comparable First Amendment clause. Tribal courts are also limited to judgements no greater than six months confinement and a five hundred dollar fine. This act also repealed section 7 of Public Law 280, which had allowed states unilaterally to assume jurisdiction over Indian lands and provided that states could only do so with the consent of affected tribes.

1969 ~ National Environmental Policy Act, (83 Stat. 852; 42 U.S.C. 4321 et seq/P.L. 91-190). Established a framework for public and tribal involvement in land management planning and actions. The law also provides for consideration of Historic, Cultural, and natural aspects of our national heritage.

1971 ~ Executive Order 11593 Protection and Enhancement of Cultural Environment.

1973 ~ Endangered Species Act, (P.L. 93-205, Amended by P.L. 93-325 and P.L. 94-359).

1974 ~ Forest and Rangeland Renewable Resources Planning Act, (88 Stat. 476, et seq). Directed and authorized the Secretary of Agriculture to make an assessment of the renewable resources and to determine the ways and means needed to balance the demand for and the supply of these renewable resources, benefits, and uses for meeting the needs of the people of the United States. Assured that National Forest plans provide for multiple use, determine harvesting levels, and determine the availability and suitability for resource management. It also specified procedures to ensure that plans are in accordance with NEPA requirements. The act is referred to as RRA.

1974 ~ Archeological and Historic Preservation Act, (P.L. 93-291).

1974 ~ Federal Noxious Weed Act, (81 Stat. 2148; 7 U.S.C. 2801/P.L. 91-629, as amended). Recognizes that the import or distribution of noxious weeds in interstate commerce often allows for their growth and spread. This in turn can interfere with the growth of useful plants, clog waterways, interfere with navigation, cause disease, or other adverse effects upon people and the environment. Prohibits knowing actions or activities, which might further encourage noxious weeds.

1975 ~ Indian Self-Determination and Education Assistance Act, (88 Stat.2203, 25 U.S.C. SS 450-450n,455-458e/P.L. 93-638, as amended). Declared congressional commitment ..."to the maintenance of the unique and continuing relationship with an responsibility to Indian people

through the meaningful Indian self-determination policy which will permit an orderly transition from Federal domination of programs for the services to Indians to effective and meaningful participation by the Indian people in the planning, conduct, and administration of those programs and services", 88 Stat at 2203. The act was amended in 1994, expanding tribal authority to assume responsibilities for tribal services formerly provided by agencies.

1975 ~ American Indian Policy Review Commission, (88 Stat. 1910 et seq). Congress established this commission, " to conduct a comprehensive review of the historical and legal developments underlying American Indian's unique relationship with the Federal Government in order to determine the nature and scope of necessary revisions in the formulation of policies and programs to benefit Indians"., 88 Stat. 1910. Its Final Report to congress is dated May 1977.

1975 ~ Dept. of Interior Treaty Fishing Regulations, (25 C.F.R. SS 255.1-10; 256.1-10; 258.1-7). This series of Code of Federal Regulations provides what exists for regulation of Indian treaty fishing rights by the Secretary of the Interior, at certain locations such as the Klamath River and the in lieu sites on the Columbia River. It also incudes rules for the identification of Indian fisherman and their nets, and other detailed regulations of specific fisheries.

1976 ~ Federal Land Policy and Management Act. (43 U.S.C. SS 1702(e)(2), 1712(b), 1712(c)(9)). Directed the Secretary of Agriculture to coordinate National Forest land use plans with the land use planning and management programs of Indian tribes. The law is often referred to as FLPMA.

1976 ~ National Forest Management Act, (90 Stat. 2949, et seq;16 U.S.C. 1601-1614). Amended the Forest and Rangeland Renewable Resources Act of 1974. The law is often referred to as NFMA.

1977 ~ Safe Drinking Water Act Amendments, (91 Stat. 1393;42 U.S.C. S 300j-6(a)/P.L. 95-190. Provides that the Public Health Service Act should not alter or affect the status of American Indian lands or water rights or waive any sovereignty over Indian lands guaranteed by treaty or statute.

1978 ~ Federal Recognition Regulations. Established procedures for non-federally recognized tribes/ traditional Indian communities to gain federal recognition of their status and reservation lands.

1978 ~ American Indian Religious Freedom Act, (P.L. 95-341, as amended). Required agencies to evaluate their actions regarding any restrictions on access to sacred areas. The law was amended in 1994.

1978 ~ Indian Mineral Development Act. Provided authority to tribes to regulate and develop tribal mineral resources, and enter into joint agreements and leases.

1979 ~ Archaeological Resources Protection Act (93 Stat. 721; P.L. 96-95, as amended). The act (P.L. 96-96 and 96-95) required tribal notification and consultation in regard to proposed excavation of archeological sites and/or removal of artifacts by permit from public lands. Also, provides that federal excavations follow the permit protocal to consult with concerned tribes. The law is often referred to as ARPA.

1983 ~ Presidential Statement on American Indian Policy (19 weekly Comp. Doc. 98-102). President Reagan's statement dated January 24, 1983 provided direction on treatment of American Indian tribes and their interests.

1990 ~ Native American Graves Protection and Repatriation Act of 1990, (25 U.S.C. 3001-3013/P.L. 101-601). Recognized Indian control of human remains and certain cultural objects when found on public lands and required consultation with appropriate tribes concerning federal finding or posession of Native American human remains and human burial objects. The law is often referred to as NAGPRA.

1990 ~ National Indian Forest Resources Management Act, Title III (104 Stat. 4532; P.L. 101-630). Provides comprehensive direction for Secretary of Interior in Forest management and protection in concert with tribes. Clarifies role of the Department of Interior. Provides for education in Indian Forest management, funding of Tribal Forest programs and trespass issues.

1993 ~ Religious Freedom Restoration Act, (P.L. 103-141). Established a higher standard for justifying government actions that may impact religious liberties.

1993 ~ Executive Order 12866 – Regulatory Planning and Review. Enhanced planning and coordination concerning new and existing regulations. Made regulatory process more accessible and open to the public. Agencies directed to seek views of tribal officials before imposing regulatory requirements the might affect them. Sought to harmonize federal regulatory actions with other governmental functions.

1993 ~ Executive Order 12875 – Enhancing the Intergovernmental Partnership. Reduced the imposition of unfunded mandates on other governments. Developed an effective process to permit other representative governments to provide timely input in the development of unfunded mandates.

1993 ~ Interior Secretarial Order No. 3175. Established responsibility of all bureaus and agencies to carry out trust responsibilities of the Federal Government and assess the impacts of their actions on Indian trust resources: Required consultation with tribes when impacts are identified.

1994 ~ Executive Order on Environmental Justice. Required increased effective participation of minorities and low economic groups in proposed project environmental assessments.

1994 ~ State Law SB61. Placed tribes in a stronger role for protecting sites on state and private lands in Oregon.

1994 ~ White House Memorandum for the Heads of Executive Departments and Agencies. Emphasized the importance of government to government relations with tribal governments and to consult with tribes prior to taking actions that may affect tribal interests, rights, and trust resources.

1994 ~ Amendment to the American Indian Religious Freedom Act (PL103-344).

1995 ~ Government to Government Relations. The US Justice Department, Attorney General issued and signed a policy statement on government to government relations on June 1, 1995. It includes references to tribes' sovereignty status and federal government's trust responsibility to tribal governments.

1995 ~ Federal Advisory Committee Act Amendment. The act provides for tribal state and county governments to be exempt from the Federal Advisory Committee Act, which prohibits federal agencies to form advisory committees that might affect its decision making process. This amendment recognizes these governments as performing already existing roles on an operational basis to represent people they are responsible to within their jurisdiction to other government bodies including the federal government. Thus federal agencies are free to consult with these type of governmental bodies and seek their advice on agencies planning activities/federal actions.

1996 ~ Executive Order of May 24, 1996. Acknowledges the role of federal agencies to protect and preserve the religious practices and places of federally recognized tribes and enrolled tribal members. Requires federal agencies to consult with federally recognized tribes to learn of tribal concerns for sacred sites on public lands, and report finding to the President within one year of the executive order. Ensures access to religious places and avoidance of adverse effects to sacred sites in accordance with existing legislation.

Evaluating Habitat, Harvestability, and Meeting American Indian Needs

Introduction

A primary concern of the Indian tribes in the Interior Columbia River Basin is the availability of the resources to which they have an interest. At issue is the availability of resources in sufficient quantities to allow harvest. A harvestable level would be one which would allow harvest or utilization of resources in sufficient quantities to satisfy the ceremonial, subsistence, and commercial needs of tribes at levels, while still providing the conservation needs of the species. Specific questions of those tribal or conservation needs have not been determined and it is outside the scope of this project to make any such determination. As noted in Chapter 2, it is recognized that differences exist in the meaning of harvestability in regard to U.S. case law and tribal desires for future socio-cultural conditions.

Inasmuch as it a legal responsibility of the Federal agencies to consult with the tribes and to take into account their needs in the decision making process. This paper describes the method used to classify habitat rankings or viability outcomes to indicate trends in viability; the relationship of harvestability to viability, and using this relationship to indicate the habitats ability to support harvestable resources.

How Harvestability Can Be Evaluated

The ICBEMP uses trends in habitat status or viability outcomes to measure the habitat's capability to sustain viable populations. Using the concepts developed for viability, we can also predict trends in habitat conditions for sustaining resources of interest to the tribes at harvestable levels. At this scale of assessment, the data will only support trends in relative habitat conditions.

The **Aquatics assessment** used population status and distribution to indicate trends in viability. The current status calls for key salmonid species at the 6th field Hydrologic Unit Code (HUC) and followed the criteria below:

Present-strong
All life history forms present.
Population stable or increasing with local population likely to be half or more of its historical size or density.
Population or meta-population probably contains at least 5000 individuals or 500 adults.

Present-depressed
A major life history component has been eliminated.
Population is declining with numbers less than half of historical capability.
Population or meta-population is less than 5,000 total fish or 500 adults.

Absent
Key salmonid is not present. It is either extinct or never occupied the watershed. The watershed is within the natural range and colonization was or is possible.

Present-unknown
The key salmonid is present, but there is no reliable information to judge the current status.
Present-migration/overwintering
Migration corridors are portions of the watershed that do not support spawning or rearing, and function solely as routes or staging and wintering areas for migrating fish.

Unknown
There is no information regarding the current presence or absence of the species.

These determinations were made using all available information and using biologists with local knowledge making the status call. Simultaneously, the same biologists made a status call of all fish species in the 5th field HUC to characterize fish communities. This status call used only two criteria: present or absent.

The status call of present-strong for the key species will be displayed by 6th field HUC. This status, while not accounting for population levels related to viable or harvestable does provide an indication that a "harvestable" population may exist based solely on the status call of "present-strong". This status can then be tracked through the modeling of scenarios and alternatives to determine if a disturbance or group of disturbance mechanisms will reduce or maintain that population at that status call through time thereby assuring that a "harvestable" population may continue to exist.

At that point it would be appropriate to go to the next level or fine scale and determine the relative population that does exist and if it exists within a larger meta-population or sub-population. This level of detail is too fine for the Scientific Assessment of the ICBEMP and will need to be conducted by field units utilizing this data assessment as a starting point for context. It would still be necessary to determine site-specific fish population status and habitat conditions before any viable or harvestable levels could be defined in a finite manner.

We can predict trends in status, on a broad scale, based on the affects of a proposed action. If a species stays in a present-strong status then we may presume the species will remain harvestable. By assessing the effects of the proposed action we can predict whether the status will change, reflecting a trend in harvestable levels.

The *Terrestrial Ecology* chapter of the *Assessment of Ecosystem Components* measured the effects of alternatives on species, particularly the degree to which habitat conditions contribute to the long-term maintenance of plants and animals. The evaluation provided a reasoned series of judgements about projected amounts and distributions of habitat and the likelihood that such habitats would allow populations to persist over 100 years. These outcomes followed the criteria below:

Outcome 1 Habitat is broadly distributed across the planning area with opportunity for continuous or nearly continuous occupation by species and little or no limitation on population interactions.

Outcome 2 Habitat is broadly distributed across the planning area, although gaps exist within this distribution. Disjunct patches of habitat are typically large enough and close enough to other patches to permit species dispersal among patches and to allow species to interact as a metapopulation (local populations linked by migrants, allowing for recolonization of unoccupied habitat patches after local extinction events).

Outcome 3 Habitat exists primarily as patches, some of which are small or isolated to the degree that species interactions are limited. Local subpopulations in most of the species' range interact as a metapopulation, but some patches are so disjunct that subpopulations in those patches are essentially isolated from other populations.

Outcome 4 Habitat is typically distributed as isolated patches, with strong limitation in interactions of populations among patches and limited opportunity for dispersal among patches. Some local populations may be extirpated, and rate of recolonization will likely be slow.

Outcome 5 Habitat is very scarce throughout the area with little or no possibility of interactions among local populations, strong potential for extirpations, and little likelihood of recolonization.

Outcome 1 indicates that a habitat to sustain a harvestable population exists. This outcome can then be tracked, as with the aquatic status, through the modeling of scenarios and alternatives to

determine if a disturbance or group of disturbance mechanisms will maintain that habitat in the outcome ranking through time, thereby assuring a "harvestable population". By assessing the effects of the proposed action we can predict whether the Outcome will change, reflecting a trend in harvestable levels.

These approaches to this project's assessment of harvestability relative to the Federal Government's trust responsibilities. This should only be used as a starting point for continued consultation between field units and individual tribes in further defining harvestable populations and the contribution habitat provides for the culturally, spiritually, and religiously important plants, animals, and fish species of the tribes in the project area.

Ethno-Habitats~ A Bridge in Understanding Tribal Issues

Introduction

People of all cultures relate to and interact with their world in ways necessary to sustain life and provide for their life ways. Those aspects of a peoples' world and culture, which contribute to this end usually become especially important to their overall community well being. Ultimately, the dependence upon and relationship a people have with their world must rely on meaningful cultural divisions of their environment and all it contains, fostering concepts of places, habitats, life forms, objects and their groupings. The sum of socially and/or traditionally significant relationships a people have with their world (for example, through land uses) and its parts provide a context for understanding the useful nature of their environment and what makes it, and its culturally significant components important.

The Basin's native Indian peoples have continued their long held interest and reliance on regional ecosystems even as their cultures change, employing both traditional and non-native ways of relating to their homelands and interest areas (lands where a tribe(s) have traditionally ranged to sustain their life way). Public lands serve to help sustain modern Indian peoples' way of life, cultural integrity, social cohesion and socio-economic well being. This occurs in part because these lands encompass large areas of traditional Indian homelands, places, habitats, resources, ancestral remains, spirits, cultural symbols and cultural heritage, which are still respected, visited, or used.

Federal agencies have become increasingly aware of how public land management has and continues to play an important role in providing for or influencing tribal interest, rights, needs, and cultural practices. Providing opportunities for traditional American Indian land uses and resource acquisition as a goal, requires that habitats and species (including life forms socially and/or traditionally significant) must be present and available year after year. The presence of healthy habitats is fundamental to the achievement of both useable and harvestable levels of resources significant to Indian peoples as well as to healthy ecosystems.

Description of Ethno-Habitats

Habitat as a concept is often defined in biological sciences as a place that supports the life of an organism, or species community including a site, locality or local environment type, for example, a mud flat, lake and upland wetland. The proper functioning condition of a habitat and its current ability to support its potential natural plant and animal community are biophysical elements that can be assessed to help describe the relative health of an ecosystem. Appropriate scientific

measures of habitats and their corresponding relationships to larger ecosystem components are useful indicators of a species' potential well-being in a given geographical area. However, this information alone would be insufficient to address the biophysical health of socially and traditionally important places (ethno-habitats).

Ethno-habitats are places, defined and understood by groups of people, within the context of their culture, identifiable in part by the culturally significant life forms or life form groups found there by cultural participants. In a general sense ethno-habitats may be thought of as "folk categories" of places and may even be defined using criteria similar to that used by ecologists or biologists to define a landscape. However, the concept is based in Anthropology and Geography and refers to the ways a culture classifies and organizes its landscapes. They are places of culturally familiar features, unique biological resources and usually have spatial conditions that facilitate harvests and often processing facilities. Ethno-habitats are defined by the cultural knowledge and ordinary experiences of traditional users, their well being is often known by these same people.

As a type of habitat, they typically have subsets of places where useable and adequate quantities of culturally significant life forms (species) may be acquired. These are somewhat analogous to ecological constructs such as a species'/species group's community, habitat and biochore. In fact, biophysical specialists may themselves understand ethno-habitats through correlates in their own profession's concepts of landscape elements, or cultural perceptions, for example, timber stands. Recognition and understanding of culturally significant plants and animals has traditionally been within the context of native taxonomic systems, developed by each indigenous culture. Although invariably different from Euro-American taxonomic systems, many similarities in how life form categories are recognized are common between the various taxonomic systems. However, differences do exist, which support different conceptual paradigms of life form categories, for example, life form classifications recognized by finer or more general divisions, or based on different structures or attributes.

Places such as fishing grounds and stations, hunting districts, berry patches, root fields, tree groves (western red cedar, pinion, white bark pine etc.) and medicine sites may all be examples of ethno-habitats. They can also be thought of as components to larger units such as traditional cultural places, aboriginal homelands or areas of interests, including both specific areas where traditional uses/activities are most likely to occur and general areas where harvest related activities may occur. Thus, ethno-habitats may serve as the basic unit for examining or determining whether cultural uses (traditional activities) are being provided for on federal lands.

Understanding what constitutes useable and adequate quantities of resources like culturally significant fish, animal and plant species is dependent on knowing the relationships between human uses, cultural information systems, and biological information. It also involves familiarity with a culture's relationships with species and their habitats, for example, taxonomy systems; ethno-habitat capabilities; human needs and practices; relevant ecosystem patterns and influences; biology of species (life-cycles etc.); and their inter-relationships through time. Practical use and application of the relationships between a culture and natural resources/habitats/landscapes requires understanding the cultural information of a people, and their resource-landscape divisions in which they interact, that is, the way they use their cultural and biological expertise.

The concepts of something being "useable" and "adequate in quantity", and of landscape divisions creating "places" are made meaningful in the context of the culture, which identifies and maintains these values and creates relationships with familiar landscapes and resources. In the case of American Indian tribes, the useability of resources are largely determined by cultural values like taste, texture, size classes, cultural significance, concentration of a resource, intended use and other cultural (non-biological) information that frequently differs from non-Indian resource values. Furthermore the useability of resources, their accessibility and the cultural significance of a resource place taken together may form the basis for identifying and describing an ethno-habitat.

Similarly, adequate quantities of resources may be determined by social-cultural systems (social reciprocity, native religions) that typically are a part of and help bind together land dependent

Indian communities. A tribe or traditional community may describe adequate quantities of culturally significant species for federal agencies in order to attain a common understanding, for example, number of spring chinook salmon needed annually by a tribe from a primary fishing ground. Of course, such assessments are inherently elastic in nature as people recognize natural fluctuations in biological systems, habitat conditions, climatic influences, and available commercial markets together with a given tribe's cultural and social/economic needs.

The aspect of place as an essential component of an ethno-habitat provides both criteria to help identify landscape division(s) and a basis for protecting, restoring and/or conserving what is culturally significant about the divisions. Inherent in such place types are the full array of cultural connections people have formed with them, and the familiarity and dependence an extended family, community, tribe or tribes may have on their resources. Ethno-habitats are often seen in sets or groups inter-connected and valued within the broader values and activities of Indian communities. As such, ethno-habitats have physical and biological elements which a culture may use to recognize and evaluate them.

For example, a fishing station on a free flowing river system may need to have certain physical features such as a convenient current flow to direct fish under scaffolds; sufficient water quality for human health; the presence of one or more culturally significant fish species in adequate quantities, and adequate access during fishing seasons. Fishing grounds, like the legally recognized "zone 6" of the mid-Columbia River, is a larger scale ethno-habitat type which can be recognizable spatially as a related set of fishing stations with habitat connectivity or influences, and culturally perceived by peoples as one and/or a collective body of significant, and useable places.

Another example of a large scale ethno-habitat is where a complex of scablands, as those located in parts of the North Fork John Day subbasin, are used by people as a place(s) to gather plant foods. They are characterized by extensive lithosols (shallow rocky soils) and known by families located in several Indian communities and reservations as a place or set of resource places. The unique hydrology and geology of the area created numerous geographically discrete habitats for plant communities, which continue to be visited by distant Indian communities. Places in the area are also considered convenient for base camps or temporary camping. Various standard roads and sometimes trails provide access to places recognized as root fields. These root fields are either a component within or coterminous with a scabland area and are valued differently given factors such as species composition, density, accessibility and associations to some Indian families.

The useability of ethno-habitats is also assessed by traditional users and tribes through other cultural criteria such as customary use practices or restrictions; familiarity of a species or habitat; presence of physical, administrative, and social barriers to access; adequate access for people, materials and/or vehicles; and the availability of seasonal resources. Certain families may visit specific root fields at different times of the spring and early summer as the particular plants become ready for harvest, or as family schedules dictate.

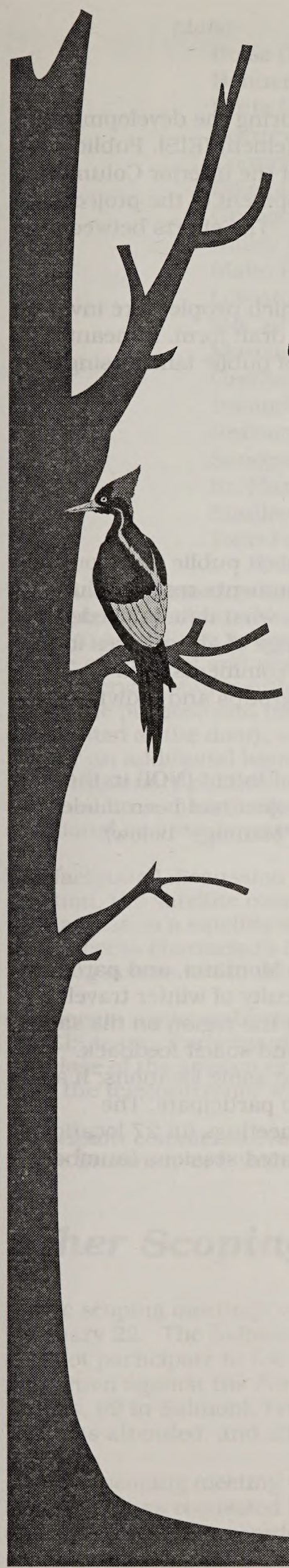
All agency units should expect to find they have jurisdiction of lands with ethno-habitats and that some management for tribal rights, interests and/or uses will be required. Still, agency understandings of ethno-habitats is extremely variable and depends largely on meaningful communication with tribes and traditional users. The intent of creating dialogue on ethno-habitats between American Indians and Forest Service and BLM agency units is to help conserve and protect healthy, sustainable, useable and accessible resources for traditional users. Therefore, the identification, management and monitoring of ethno-habitats needs to be conducted in consultation with tribes and involve resource user's knowledge and expertise. Biophysical expertise, often relied upon by federal agencies and tribal governments, can provide an important knowledge base that should be used in concert with the cultural expertise of traditional users to aid agency decisions.

The environmental concerns of tribes involve fine, mid and broad ecosystem management scales, given factors which affect ethno-habitats located within tribes' reservations, ceded lands and areas of interest. At the broad and mid-scale levels, there is less dependance on and influence from

cultural classification systems/values upon ecosystem management and a great influence from scientific paradigms taken from disciplines such as ecology, landscape ecology and geography. In other words, people and their cultures typically function within fine scale landscapes, understanding and creating most of their meaningful world divisions at this spatial level. Thus, larger scale assessments may more freely use scientific templates to frame ethno-habitat needs.

Consideration of ethno-habitats at mid and large scale levels in public land management can be helped by using scientific constructs, that is, terrestrial vegetation communities, potential vegetation groups and subbasin spatial units; large scale assessment techniques; and understandings of the regulation processes, patterns, functions and structures of ecosystem components. Information about current and projected species populations, and habitat distributions can also provide data useful for fine scale assessments of some ethno-habitats and culturally significant species, for example, viability panel assessments for species with identified viability concerns (Appendix K on Viability and the harvestability paper in Appendix C).

Broad and mid-scale landscape assessments can provide a framework for addressing tribal issues concerning American Indian ethno-habitats; however, all ecosystem management scales necessarily require meaningful dialogue with those who would most benefit. Tribal consultation, as an ongoing process, is an essential element in ethno-habitat management to facilitate the conservation and restoration (passive and active) of culturally significant habitat places and allowances for cultural uses. Commitment by decision makers to provide for culturally significant species and their habitats at sustainable/useable levels would help federal land managing agencies address their trust responsibilities toward tribes, meet the intent of statutes that encourage dialogue between agencies and concerned public land users, and allow for American Indian life ways.



Appendix D
UCRB Public Involvement

(Comparable to Eastside Appendix 1-3 and Appendix 1-4)

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Introduction

This appendix describes the public involvement activities that occurred during the development of the Upper Columbia River Basin (UCRB) Draft Environmental Impact Statement (EIS). Public involvement efforts that occurred in conjunction with other components of the Interior Columbia Basin Ecosystem Management Project (ICBEMP)—specifically, with development of the project's science projects and with the Eastside Draft EIS—are described elsewhere. The efforts between the teams were coordinated and sometimes combined.

The overall goal for public involvement was to have an open process by which people were involved early and often, sharing information available at the time even if it was in draft form. It meant reaching out to a wide spectrum of the public interested in management of public lands using some non-traditional methods.

UCRB Scoping

Scoping is a process required in the early stages of preparing an EIS to solicit public input on the scope and significance of the proposed action (NEPA, 40 CFR 1501.7). Comments received during scoping are important to help determine what level of analysis is required, what data is needed, and what issues are to be considered in development and analysis of a range of alternatives in the EIS. For this project, the Forest Service and the BLM sought information, comments, and assistance from Federal, tribal, State, and local agencies, and from other groups and individuals interested in or affected by the proposed action.

Scoping for the UCRB EIS formally opened with publication of the Notice of Intent (NOI) in the *Federal Register* on December 7, 1994. Previous announcements of the project had been made via news releases and a press conference during July and August, 1994 (see "Mailings" below).

Video Teleconference

Given the holiday season, the wide geographic scope of the project (Idaho, Montana, and parts of Wyoming, Nevada, and Utah), time constraints, and the expense and difficulty of winter travel, a decision was made to conduct simultaneous scoping meetings throughout the region on the same day using satellite technology to present information, link meeting sites, and solicit feedback. Participants were asked to register in advance because of limited seating in some locations; if a site filled, additional locations were secured to accommodate all who wished to participate. The teleconference (originating from Boise State University in Idaho) and the meetings (in 27 locations) were held on January 28, 1995. The following communities hosted facilitated sessions (numbers of participants in parentheses):

Idaho
- Boise (75)
- Bonners Ferry (25)
- Butte (20)
- Coeur d'Alene (41)
- Council (9)
- Elko (43)
- Grangeville (17)
- Hailey (16)
- Idaho Falls (24)
- Lewiston (38)
- McCall (34)
- Moscow (44)
- Orofino (18)
- Pocatello (15)
- Rexburg (16)
- Sandpoint (45)
- St. Maries (14)
- Stanley (17)
- Twin Falls (31)

Montana
- Hamilton (39)
- Helena (16)
- Kalispell (58)
- Libby (36)
- Missoula (65)

Washington
- Walla Walla (18)

Wyoming
- Jackson (16)

Other
- Washington, DC (5)

The teleconference medium allowed a great number of individuals and communities to participate in scoping in a short amount of time. Project managers, team leaders, and staff were present in Boise to participate in the live broadcast and provide information about a specially prepared video on the purpose of and need for the project. After the first hour of live broadcasts, local BLM and Forest Service staff members facilitated discussions at the meeting sites, collecting comments about the purpose and need (which had been mailed in advance), the proposed action (which was distributed at the door), and any other issues raised. The live satellite link resumed later in the day for an additional hour and half of discussion with Project Manager Steve Mealey and Boise State University political science professor John Freemuth, who discussed a sampling of comments that had been mailed electronically to Boise throughout the day. Participants were advised that additional comments would be accepted by mail or phone until April 15.

The facilitated discussion sessions on January 28 were attended by a total of 795 people. In addition, the satellite coordinates were published so that anyone in the continental United States with access to a satellite dish was able to view the program and mail in comments. Three local cable access channels in Idaho and Montana carried portions of the teleconference, potentially granting access to thousands of people in the UCRB planning area.

Comments made orally during the facilitated sessions were recorded and transmitted verbatim to the EIS team. Participants attending the sessions also were invited to submit written comments at the close of the session or to mail their comments to the EIS team. All oral and written comments from the teleconference were analyzed and used in preparing the Draft EIS.

Participant comments evaluating the use of the teleconference method for scoping are summarized in the Summary of Public Comments section of this report.

Other Scoping Meetings

Public scoping meetings were held in Challis, Idaho, on February 21, 1995, and Salmon, Idaho, on February 22. The Salmon/Challis National Forests had made a decision to postpone the meeting and not participate in the January 28 teleconference to avoid potential hostilities related to a legal injunction against the Forest Service. The February meetings were attended by 133 people (64 in Challis, 69 in Salmon). Project Manager Steve Mealey and EIS Co-Team Leader Cindy Deacon Williams attended, and all comments were recorded.

A public scoping meeting was held in Coeur d'Alene on March 13, 1995 to provide additional clarification as requested by individuals in that city. Project Manager Steve Mealey attended, and all comments were recorded.

Public Briefings and Presentations

Project Briefings

Beginning in March 1994, the Project held monthly briefings hosted by the Science Integration Team and the Eastside EIS Team. The Upper Columbia River Basin EIS Team joined the monthly briefings in January 1995. The purposes of the briefings were to provide an update on the progress of the science and EIS products, answer questions, and provide a continuing public dialogue between the public and the Project staff. Beginning in 1996 briefings were held as new information became available, generally every two to four months.

Science Integration Team members representing the Aquatic, Terrestrial, Landscape Ecology, Social Science, Economic, and Spatial staff areas, and EIS Team representatives made presentations followed by a question and answer session. The format of the briefings changed in 1995 to include an open house segment where the science staff areas and EIS Team members could meet with the public one-on-one. The briefings were held in Walla Walla, Washington; Coeur d'Alene, Idaho; Missoula, Montana; and Boise, Idaho. There were over twenty Project briefings held from March 1994 to February 1997.

The EIS Team used these briefings to present pieces of the EIS that were being worked on at the time. Draft versions of the Purpose and Need, Proposed Action, and the various components of alternatives were presented at these briefings. The Team answered questions and accepted feedback.

The briefings were open to everyone. Notices containing the date, time, location and a brief agenda were sent to the Project mailing list 2-3 weeks prior to the briefings. News releases were sent out to the local media where the briefings were held. The briefings were generally a day or a day and a half long. There were some evening sessions that presented special topics related to the Project, such as the economic life in rural counties, an American Indian perspective of natural resource management, and a history of the Columbia River Basin. Attendance at the briefings and evening sessions varied but was generally between 40 and 100 people.

For those people who could not attend the briefings, the general content of the presentations, and the questions and answers were recorded and made available to the public through the electronic library, local information binders, and by request.

Social Science Symposium

The project's social science team held a day-long symposium on the *Social Implications of Ecosystem Management* in Spokane on April 29, 1995. The symposium was free and widely advertised, including an announcement of the session to everyone on the Project mailing list. The purpose was to share ideas and research results, demonstrate how research applies to peoples' practical needs, and provide a forum for discussing social aspects of the Project.

The symposium, attended by 80 people, consisted of 13 separate presentations about social research and analysis being conducted for the project; much time was devoted to question and answer sessions. Topics discussed by the 26 social scientists included community health and resiliency, scenery and recreation, and public participation techniques and principles. Evaluation forms completed by the attendees suggested that the symposium was a useful approach in exchanging information and making science more accessible to people. A full report on the symposium, including the evaluation forms and abstracts of all presentations, is available from the Project office in Walla Walla.

Special Presentations

The Project responded to over 70 requests for presentations from other federal agencies, state, county, and tribal governments, forest and rangeland user groups, conservation and environmental organizations, professional societies, and civic organizations. Over 2,800 people attended the various presentations. Most presentations gave overviews of the Science and EIS components of the Project. Depending on the audience, some presentations focused on specific aspects of the Project.

Sources of UCRB EIS Information

Electronic Library

During the first round of meetings, many people suggested setting up an electronic bulletin board as a way to facilitate public involvement. The Project took a first step in that direction by developing an electronic library where Project information was stored. People with personal computers and modems could connect directly with the Project computer system to read and download documents. The electronic library was not interactive but it did provide another means for making information more accessible. As of August 1996, approximately 350 individual users had accessed the electronic library.

Internet

In October 1995, the information from the electronic library was made available on Internet through the Forest Service Home Page system. Similar to the electronic library, information was available to read and download. This allowed many more people local access to the Project information through their local Internet servers without having to call long distance. This helped expand the publics' ability to access the Project's information.

In August 1996, Project staff developed a World Wide Web site where Project information now resides. The Web site address is http://www.icbemp.gov and was expanded to include the following information:

- Geographic Information Systems data and themes;
- Science Integration Team reports;
- Eastside and Upper Columbia River Basin EIS public involvement, documents, and status; and
- Project personnel.

As of February 1997, more than 1,800 people had visited the Project's homepage.

Toll-Free Telephone Number

A toll-free number provided another means for people to access Project information. People calling the number were provided a menu of topic items which contained current information about the

Project. The information was updated once or twice a month and included a list of upcoming events and a report on Science and EIS progress. People calling the toll-free number during business hours could talk to the receptionist to obtain additional information.

Mailings

The mailing list for the UCRB EIS consists of 2,277 addresses, compiled originally from Forest Service and BLM office mailing lists in Montana, Wyoming, Nevada, Idaho, and Utah, and from the PACFISH mailing list. Other names were submitted from interested individuals and were collected from various public scoping and informational meetings.

The following mailings were sent:

Local and Regional Media Mailing List

- ◆News release (July 1994) ~ BLM and Forest Service announce Columbia Basin Environmental Study.
- ◆News release (August 23, 1994) ~ Press conference with Idaho State Governor Cecil Andrus announces the project.
- ◆News release (January 1995) ~ Teleconference scoping meeting is announced.

UCRB Mailing List

- ◆Brochure (January 1995) ~ Teleconference scoping meeting information is announced.
- ◆Verbatim teleconference comments (April 1995) ~ Booklet provides verbatim comments from all teleconference sessions.
- ◆Goals brochure (May 1995) ~ Describes how goals were developed from public comments. This brochure was prepared jointly with the Eastside EIS team and mailed to both EIS mailing lists (more than 5,000 addresses combined). A response form was included for people to send comments on the goals. More than 140 responses were received.
- ◆Comments-to-Issues brochure (July 1995) ~ Tracks how comments were collected, analyzed, and how the comments contributed to issue, goal, and alternative formulation.
- ◆Themes-for-Alternatives brochure (September 1995) ~ Describes how public comments, issues, and goals contributed to alternative theme formulation. This brochure also was developed jointly with the Eastside EIS team and was sent to the combined mailing list.

Briefings and Consultations

Meetings, briefings, and consultations with numerous individuals, agencies, and organizations were held throughout the development of the UCRB Draft EIS. The following lists the meetings or briefings held from August 22, 1994 through May 7, 1996.

DATE	LOCATION	MEETING WITH	UCRB PERSON
8/22/94	Ogden, Utah	Forest Service Intermountain Regional Directors	Steve Mealey
8/23/94	Boise, Idaho	Governor's Press Conference	Steve Mealey
8/23/94	Boise, Idaho	ICBEMP Executive Steering Committee	Steve Mealey
8/25/94	Boise, Idaho	Mary Gaylord, BLM	Gary Wyke/ Cindy Deacon Williams
8/25/94	Boise, Idaho	Kim Eckhart, *Idaho Statesman*	Steve Mealey
8/29/94	Boise, Idaho	Senator Craig ~ Forest Health Appeals Hearing	Steve Mealey
8/31/94	Boise, Idaho	Idaho Division of Environmental Quality	Steve Mealey/Tom Quigley et al.
9/2/94	Boise, Idaho	Idaho Department of Water Resources	Steve Mealey
9/8/94	Spokane,Washington	Inland Western Forests Symposium	Steve Mealey
9/8/94	Boise, Idaho	Idaho Rivers Working Group	Gary Wyke/ Cindy Deacon Williams
9/14/94	Boise, Idaho	Forest Service Planning and Fisheries Staff	Steve Mealey
9/14/94	Boise, Idaho	Paul Seronko, BLM Environmental Protection Specialist	Gary Wyke/ Cindy Deacon Williams
9/21/94	Hayden Lake, Idaho	Idaho Forest Products Committee	Steve Mealey
9/27/94	Walla Walla, Washington	ICBEMP Executive Steering Committee	Steve Mealey
9/30/94	Boise, Idaho	National Wildlife Federation	Steve Mealey
10/4/94	Powell, Idaho	Forest Service Northern Region Leadership Team	Steve Mealey
10/3/94	Boise, Idaho	Sierra Magazine	Steve Mealey
10/3-4/94	Ogden, Utah	Forest Service Intermountain Region Leadership Team	Steve Mealey
10/7/94	Boise, Idaho	Dominick Dellasalla, World Wildlife Federation	Cindy Deacon Williams
10/7/94	Boise, Idaho	Idaho Department of Fish & Game	Steve Mealey
10/12/94	Boise, Idaho	Line Officers	Steve Mealey
10/13/94	Boise, Idaho	Boise State University ~ Symposium	Steve Mealey

DATE	LOCATION	MEETING WITH	UCRB PERSON
10/20/94	Boise, Idaho	Don Martin, Environmental Protection Agency	Steve Mealey
11/2-4/94	St. Maries, Idaho	Forest Service Northern Region Leadership Team	Steve Mealey
11/1-3/94	Carson Valley, Utah	Public Affairs, Intermountain Region	Carl Gidlund
11/4/94	Moscow, Idaho	Moscow Intermountain Research Station	Steve Mealey
11/7/94	Billings, Montana	Rangeland Reform Implementation	Gary Wyke/ Kathy Cushman
11/12/94	Missoula, Montana	University of Montana ~ International Temperate Forest Conference	Steve Mealey
11/14/94	Missoula, Montana	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
11/15/94	Hamilton, Montana	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
11/16/94	Helena, Montana	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
11/16/94	Helena, Montana	Governor of Montana	Steve Mealey
11/17/94	Kalispell, Montana	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
11/17/94	Libby, Montana	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
11/17/94	Boise, Idaho	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
11/18/94	Moscow, Idaho	University of Idaho, Forestry, Wildlife & Range Guidance Council	Steve Mealey
11/18/94	Boise, Idaho	Northwest Woodworkers	Steve Mealey
11/18/94	Boise, Idaho	Dave Vandegraaf, Boise Cascade Corporation	Steve Mealey
11/21/94	Boise, Idaho	Governor Andrus	Steve Mealey
11/23/94	Boise, Idaho	Dave Vandegraaf, Boise Cascade Corporation	Steve Mealey
11/23/94	Boise, Idaho	Senator Craig	Steve Mealey
11/28/94	Boise, Idaho	Forest Service Intermountain/ Northern Regions Planners	Steve Mealey
11/28/94	Helena/Missoula, Montana	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
11/29/94	Hamilton,Montana/ Coeur d'Alene, Idaho	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
11/30/94	Boise, Idaho	Idaho Rangeland Committee	Gary Wyke
11/30/94	Coeur d'Alene, Idaho	Intermountain Forest Industry Association	Steve Mealey

DATE	LOCATION	MEETING WITH	UCRB PERSON
12/1/94	Houston, Texas	Boone and Crockett Annual Meeting	Steve Mealey
12/5/94	Boise, Idaho	Outfitters & Guides	Steve Mealey
12/6/94	Coeur d'Alene, Idaho	Idaho Panhandle National Forest	Steve Mealey
12/7/94	Orofino, Idaho	Forest Service and External Groups	Steve Mealey
12/8/94	Lewiston, Idaho	Forest Service and External Groups	Steve Mealey
12/8/94	Boise, Idaho	Policy Analysis Group, University of Idaho, College of Forestry, Range and Wildlife	Steve Mealey
12/9/94	Boise, Idaho	Dominick Dellasalla, World Wildlife Foundation	Gary Wyke/ Cindy Deacon Williams
12/13/94	Boise, Idaho	Liz Merrill, Conservation Coordinator, North Rockies Campaign	Steve Mealey
12/16/94	Coeur d'Alene, Idaho	Idaho Forest Products Commission	Steve Mealey
12/16/94	Boise, Idaho	Paul H. Calverly, State Conservationist	Gary Wyke
12/21/94	Boise, Idaho	Winston Wiggins, Idaho Department of Lands	Steve Mealey
1/6/95	Boise, Idaho	Senator Craig	Steve Mealey
1/9/95	Dubois, Idaho	Jim Fitzgerald, USDA, Agri Research Service/US Sheep Experiment Station	Steve Mealey
1/10/95	Salt Lake City, Utah	Governor's Office of Planning & Budget, Resource Development Committee	Steve Mealey
1/10-11/95	Jackson, Wyoming	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
1/11/95	Coeur d'Alene, Idaho	Coeur d'Alene Tribes	Gary Wyke
1/11/95	Plummer, Idaho	Coeur d'Alene Tribes	Gary Wyke
1/12/95	Idaho Falls/ Pocatello, Idaho	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
1/13/95	Boise, Idaho	Congressional Briefing ~ Governor Batt's Staff	Steve Mealey
1/13/95	Boise, Idaho	Gallatin Group	Steve Mealey
1/17/95	Boise, Idaho	R.C."Bob" Sears, Idaho Cattle Association	Steve Mealey
1/17/95	Burley, Idaho	Forest Service and Bureau of Land Management	Gary Wyke/ Cindy Deacon Williams
1/19/95	Fort Hall, Idaho	Shoshone-Bannock Tribe	Andy Brunelle
1/20/95	Salem,Oregon	Associated Oregon Loggers	Steve Mealey
1/20/95	Seattle, Washington	Pacific Northwest Endangered Species Group	Cindy Deacon Williams

DATE	LOCATION	MEETING WITH	UCRB PERSON
1/20/95	Boise	Idaho Department of Lands/Idaho Fish Game, & Department of Environmental Quality	Gary Wyke/Trish Carroll/ Andy Brunelle
1/23/95	Salmon/Challis	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
1/24/95	Elko,Nevada/ Twin Falls, Idaho	Forest Service, Bureau of Land Management, and External Groups	Steve Mealey
1/25/95	Poulson, Montana	Flathead Basin Commitee, Missoula Intergoverment Organization.	Andy Brunelle
1/26/95	Boise, Idaho	Idaho Today Talk Show	Steve Mealey
1/27/95	Boise, Idaho	Idaho State Senate Resources and Environmental Committee Testimony	Steve Mealey
1/28/95	27 sites	Scoping Teleconference	UCRB Team
1/31/95	Boise, Idaho	CH2M Hill	Gary Wyke
2/2/95	Boise, Idaho	Cecil Andrus, Andrus Center for Public Policy	Steve Mealey/ Andy Brunelle
2/2/95	Boise, Idaho	State Resource Committee	Steve Mealey
2/4/95	Lewiston, Idaho	ROOTS ~ Dinner Speaker	Steve Mealey
2/6/95	Boise, Idaho	Idaho Outfitters and Guides	Steve Mealey
2/7/95	Missoula, Montana	Forest Service, Northern Region Leadership Team	Steve Mealey
2/7/95	Missoula, Montana	*Missoulian* Editorial Board	Steve Mealey
2/8/95	Boise, Idaho	Coeur d'Alene Basin Interagency Group	Andy Brunelle
2/8/95	Boise, Idaho	Idaho Outfitters and Guide Panel	Steve Mealey
2/10/95	Boise, Idaho	Jim Lyons, Undersecretary of Agriculture	Steve Mealey
2/10/95	Nampa, Idaho	Idaho Rural Development Council	Andy Brunelle
2/13/95	Boise, Idaho	Idaho Department of Fish & Game, Conservation Strategy	Andy Brunelle
2/15/95	Boise, Idaho	Chuck Lobdell, US Fish & Game	Steve Mealey
2/16/95	Boise, Idaho	*Idaho Statesman* Editorial Board	Steve Mealey
2/17/95	Boise, Idaho	Idaho Department of: Fish and Game, Environmental Quality, and Lands - Watershed Anaysis	Andy Brunelle/ Trish Carroll
2/18/95	Idaho Falls, Idaho	Senator Craig	Steve Mealey
2/21/95	Challis, Idaho	Scoping Meeting	Steve Mealey
2/22/95	Salmon, Idaho	Scoping Meeting	Steve Mealey
2/23/95	Boise, Idaho	Governor Batt and Dale Bosworth, Intermountain Regional Forester	Steve Mealey

DATE	LOCATION	MEETING WITH	UCRB PERSON
2/24/95	Walla Walla, Washington	Eastside Ecosystem Coalition	Andy Brunelle
3/1/95	Boise, Idaho	Hydrologists and Biologists Meeting	Cindy Deacon Williams/ Trish Carroll
3/2-3/95	Las Vegas, Nevada	Forest Service Intermountain Region Leadership Team	Steve Mealey
3/3/95	LaGrande, Oregon	Northwest Woodworkers	Andy Brunelle
3/7/95	Boise, Idaho	Kurt Mutchler, National Geographic	Steve Mealey
3/7/95	Boise, Idaho	Idaho Department of Fish & Game	Steve Mealey/Gary Wyke/ Cindy Deacon Williams
3/8/95	Boise, Idaho	Bob Doppelt, Pacific Rivers Council	Steve Mealey
3/9/95	Boise, Idaho	Mark Dunn, Simplot Corporation	Steve Mealey
3/14/95	Missoula, Montana	Forest Service Northern Region ~ Silvicultural Workshop	Steve Mealey
3/13/95	Coeur d'Alene, Idaho	George Babb, Kootenai Environmental Alliance	Steve Mealey
3/16/95	Boise, Idaho	Idaho Chapter of American Fisheries Society	Cindy Deacon Williams
3/20/95	Boise, Idaho	Nate Fisher, Governor Batt's Natural Resource Advisor	Steve Mealey
3/20/95	Boise, Idaho	Neil Sampson, American Forests	Steve Mealey
3/22-23/95	Boise, Idaho	Public Science Integration Team	ID Team
3/22/95	Libby, Montana	Lincoln City Commissioners	Steve Mealey
3/23/95	Missoula, Montana	Chris Frissel, Pacific Rivers Council	Trish Carroll/Gary Wyke/ Cindy Deacon Williams/ Andy Brunelle
3/24/95	Boise, Idaho	Idaho Forests Industry Association, INFISH	Andy Brunelle
3/24/95	Portland, Oregon	National Marine Fisheries	Steve Mealey/Tom Quigley/ Jeff Blackwood
3/24/95	Minneapolis, Minnesota	Wildlife Management Institute and Boone & Crockett	Steve Mealey
3/29-31/95	Walla Walla, Washington	ICBEMP Executive Steering Committee and Consultation with Nez Perce Tribe	Steve Mealey
3/31/95	Walla Walla, Washington	Eastside Ecosystem Coalition	Andy Brunelle
4/2-5/95	Washington DC	Subcommittee on Forests and Public Land Management ~ Testimony	Steve Mealey
4/3/95	Boise, Idaho	Gene Persha	Andy Brunelle
4/5/95	Boise, Idaho	Northwest Power Planning Council	Gary Wyke/ Cindy Deacon Williams/ Andy Brunelle

DATE	LOCATION	MEETING WITH	UCRB PERSON
4/6/95	Boise, Idaho	Governor's Office, Idaho Fish and Game, & Northwest Power Planning Council	Steve Mealey
4/10/95	Elko, Nevada	Elko County Commissioners and Public	Steve Mealey
4/11/95	Boise, Idaho	US Fish & Wildlife	Steve Mealey
4/12-13/95	Boise, Idaho	Idaho Affairs Meeting	Steve Mealey/ Andy Brunelle
4/17/95	Denver, Colorado	Planning Workshop	Andy Brunelle
4/18/95	Boise, Idaho	Boise National Forest ~ Hazard Risk Model Meeting	Steve Mealey
4/19/95	Boise, Idaho	Idaho Mining Association	Andy Brunelle
4/20-21/95	Moscow, Idaho	Policy Analysis Group/University of Idaho College of Forestry, Wildlife and Range Guidance Council	Steve Mealey
4/21/95	Orofino, Idaho	James W. Grunke, Orofino Chamber of Commerce	Steve Mealey
4/21/95	Orofino, Idaho	Orofino Chamber of Commerce and Clearwater Resource Coalition	Steve Mealey
4/26-27/95	Boise, Idaho	Idaho Forest Products Commission	Steve Mealey
4/26/95	Boise, Idaho	Rick Bloom ~ LaGrande Radio Talk Show	Steve Mealey
4/28/95	Missoula, Montana	FS Northern Region Leadership Team	Steve Mealey
5/1/95	Kennewick, Washington	Northwest Pulp & Paper Workers Resource Council	Steve Mealey
5/5/95	Boise, Idaho	Dave Vandegraaf, Boise Cascade Corporation	Steve Mealey
5/10/95	Boise, Idaho	Julie Knutson ~ Interview	Steve Mealey/ Andy Brunelle
5/11/95	St George, Utah	National Association of Counties 1995 Western Interstate Regional Conference	Steve Mealey
5/12/95	Spokane, Washington	Govenor's Offices Meeting ~ Washington, Montana, Idaho, and Oregon	Steve Mealey/ Andy Brunelle
5/16/95	Boise, Idaho	Idaho Environmental Professionals Seminar	Steve Mealey
5/17/95	Boise, Idaho	UCRB Field Advisory Team	Gary Wyke
5/18/95	Boise, Idaho	SIT Public Open House	UCRB Team
5/19/95	Redfish Lake, Idaho	Idaho Conservation League	Cindy Deacon Williams
5/20/95	Boise, Idaho	Idaho Trails Council	Andy Brunelle
5/22/95	Walla Walla, Washington	Consultation Meeting	Gary Wyke/Andy Brunelle/ Cindy Deacon Williams

DATE	LOCATION	MEETING WITH	UCRB PERSON
5/23/95	Portland, Oregon	Portland Rotary Club	Steve Mealey
5/24/95	Boise, Idaho	American Pulpwood Association	Steve Mealey
5/30/95	Philipsburg , Montana	Granite County Board of Commissioners	Steve Mealey/ Andy Brunelle
5/31/95	Missoula, Montana	Spudzone Meeting	Cindy Deacon Williams
6/1-2/95	Boise, Idaho	Andrus Center for Public Policy ~ Bull Trout Conference	UCRB Team
6/5/95	Boise, Idaho	Doug Tims, Idaho Outfitters & Guides Association	Steve Mealey
6/7/95	Spokane, Washington	UCRB Field Advisory Team and Eastside Line Officers	Andy Brunelle/Gary Wyke/ Cindy Deacon Williams
6/14/95	Priest River, Idaho	Chamber of Commerce	Steve Mealey
6/15/95	McCall, Idaho	Idaho Cattle Association	Steve Mealey
6/22/95	Boise, Idaho	Lions Club	Andy Brunelle
6/23/95	Walla Walla, Washington	Eastside Ecosystem Coalition	Andy Brunelle
6/24/95	Caldwell, Idaho	Albertson College Western States Conference	Steve Mealey/Tom Quigley
6/28/95	Boise, Idaho	Jim Riley, Intermountain Forest Industries Association	Steve Mealey
6/29/95	Boise, Idaho	*Idaho Statesman*	Steve Mealey
7/5/95	Portland, Oregon	Region VI Meeting	Andy Brunelle/ Trish Carroll
7/7/95	Portland, Oregon	Northwest Forestry Association	Steve Mealey
7/12/95	Boise, Idaho	Idaho Cattle Association	Steve Mealey
7/12/95	Boise, Idaho	Environmental Community	Steve Mealey
7/12/95	Boise, Idaho	Governor Batt and Natural Resource Advisors	Steve Mealey
7/12/95	Boise, Idaho	*Idaho Statesman* Editorial Board,	Steve Mealey
7/12/95	Boise, Idaho	Idaho Association of Counties	Steve Mealey
7/12/95	Hayden Lake, Idaho	Intermountain Forest Industries Association Board of Directors	Steve Mealey
7/13/95	Spokane, Washington	*Spokesman Review* Editorial Board	Steve Mealey
7/13/95	Spokane, Washington	Eastside Coalition of Counties Committee	Steve Mealey
7/13/95	Helena, Montana	Governor Rociot and Directors of Fish, Wildlife Parks and State Lands	Steve Mealey
7/14/95	Lochsa, Idaho	Northwest Timber Workers	Steve Mealey
7/26/95	Baker City, Oregon	Boise Cascade Corporation	Steve Mealey/ Jeff Blackwood

DATE	LOCATION	MEETING WITH	UCRB PERSON
8/2/95	Boise, Idaho	Northwest Mining Association	Steve Mealey
8/2/95	Portland, Oregon	Planners Contingency Meeting	Andy Brunelle
8/15/95	Seattle, Washington	Pulp and Paper Workers Resource Council and Western Region Meeting	Steve Mealey
8/17/95	Boise, Idaho	Governor Batt's Natural Resource Agencies Meeting	Steve Mealey/ Andy Brunelle
8/21/95	McCall, Idaho	Valley County Commissioners	Steve Mealey
8/21/95	Council, Idaho	Adams County Commissioners	Steve Mealey
8/25/95	Post Falls, Idaho	Idaho Mining Association	Steve Mealey
8/28/95	Murphy, Idaho	Owyhee County Commissioners	Steve Mealey/ Andy Brunelle
8/29/95	McCall, Idaho	State Water Quality Meeting	Andy Brunelle/ Steve Mealey
9/7/95	Boise, Idaho	US Fish & Wildlife and National Marine Fisheries Service	Steve Mealey/ Andy Brunelle
9/8/95	Boise, Idaho	University of Idaho, Policy Analysis Group, College of Forestry, Range & Wildlife	Steve Mealey
9/12/95	Riggins, Idaho	Idaho Forest Products Commission ~ Idaho Forests "Miracle at Work" Field Tour	Steve Mealey
9/13/95	Corvallis, Oregon	Oregon State University ~ Ecosystem Management Conference	Steve Mealey
9/14/95	Missoula, Montana	Northwest Power Planning Council and Boone & Crockett	Steve Mealey
9/18/95	Billings, Montana	Montana Association of Counties	Steve Mealey
9/19/95	Salmon, Idaho	Idaho Forest Supervisors	Steve Mealey
9/20/95	Hayden Lake, Idaho	Idaho Forest Products Commission	Steve Mealey
9/20/95	Boise, Idaho	UCRB Field Advisory Team	Gary Wyke/Jeff Walter
9/21/95	Boise, Idaho	Lorna Jorgensen, Idaho Association of Counties	Steve Mealey/ Andy Brunelle
9/24-25/95	LaFayette, Louisiana	National Association of State Foresters	Steve Mealey
10/10/95	Murphy, Idaho	Owyhee County Commissioners	Steve Mealey
10/12/95	Boise, Idaho	Boise Rotary Club	Steve Mealey
10/24/95	Boise, Idaho	UCRB Field Advisory Team	Gary Wyke/Jeff Walter/ Andy Brunelle
10/25/95	Boise, Idaho	Governor Batt's Bull Trout Conservation Strategy Meeting	Andy Brunelle/ Steve Mealey
10/25/95	Boise, Idaho	Ada County Fish & Game League	Steve Mealey
10/27/95	Boise, Idaho	Idaho Rangeland Resources Committee	Steve Mealey

DATE	LOCATION	MEETING WITH	UCRB PERSON
10/31/95	Boise, Idaho	Kiwanis Club	Steve Mealey
11/1/95	Boise, Idaho	Timber Measurements Society	Steve Mealey
11/9/95	Corvallis, Oregon	Starker Lecture Program, Oregon State University	Steve Mealey
11/13/95	Boise, Idaho	Bonneville Power Administration	Gary Wyke/Jeff Walter/ Andy Brunelle
12/4/95	Coeur d'Alene, Idaho	Western Forestry Association	Steve Mealey
12/7/95	Spokane, Washington	Northwest Mining Association	Steve Mealey
12/7/95	Coeur d'Alene, Idaho	Intermountain Forest Industries Association	
12/8/95	Coeur d'Alene, Idaho	Idaho Forest Products Commission	Steve Mealey
12/18/95	Boise, Idaho	Governor's Bull Trout meeting	Andy Brunelle
1/9/96	Boise, Idaho	Boise State University panel	Andy Brunelle
1/10/96	Boise, Idaho	Governor's Bull Trout meeting	Steve Mealey
1/11/96	Boise, Idaho	Lynn McKee, Environmental Protection Agency	Steve Mealey
1/16/96	Boise, Idaho	Regulatory Agencies	Steven Mealey/Tom Quigley
1/17/96	Boise, Idaho	Norm Arsenault and Missy Guisto ~ Senator Craig's staff	Steve Mealey
1/24-25/96	Boise, Idaho	Aquatic Conservation meeting	Steve Mealey
2/2/96	Boise, Idaho	BLM and USFS employees	Steve Mealey
2/8/96	Missoula, Montana	USFS Region 1 leadership meeting	Steve Mealey
2/8/96	Boise, Idaho	Idaho Association of Counties	Steve Mealey
2/9/96	Boise, Idaho	Eastside Coalition of Counties	Steve Mealey
2/19/96	Boise, Idaho	Secretary Glickman briefing	Steven Mealey
2/19/96	Boise, Idaho	Governor's Bull Trout meeting	Steve Mealey
2/22/96	Boise, Idaho	Northwest Power Planning Council	Steve Mealey
2/28/96	Boise, Idaho	Idaho Forest Supervisors	Steve Mealey
2/28/96	Boise, Idaho	Bob Dale, AFSEE	Steve Mealey
2/29/96	Boise, Idaho	Public Meeting	Steve Mealey/Tom Quigley
3/5/96	Murphy, Idaho	Owyhee County Commissioners, Public, and USFS/BLM	Steve Mealey
3/6/96	Walla Walla, Washington	Umatilla Tribe	Steve Mealey/Steve Kozel/ Andy Brunelle
3/13/96	Boise, Idaho	Idaho BLM Retiree's Association	Andy Brunelle
3/19/96	Dubois, Idaho	Clark County Commissioners, Public, and BLM/USFS	Steve Mealey

DATE	LOCATION	MEETING WITH	UCRB PERSON
3/19/96	Challis, Idaho	Custer County Commissioners, Public, and BLM/USFS	Steve Mealey
3/20/96	Boise, Idaho	Boise National Forest Leadership Team	Steve Mealey
4/3/96	Burley, Idaho	Cassia County Commissioners, Public, and BLM/USFS	Steve Mealey
4/4/96	Missoula, Montana	Granite County Commissioners	Steve Mealey
4/4/96	Missoula, Montana	Public Meeting	Steve Mealey/Tom Quigley
4/4/96	Missoula, Montana	Montana BLM/FS personnel	Steve Mealey/Tom Quigley
4/9/96	Moscow, Idaho	Wilderness Colloquium Panel	Steve Mealey
4/11/96	Walla Walla, Washington	Eastside Coalition of Counties	Steve Mealey/ Andy Brunelle
4/13/96	Coeur d'Alene, Idaho	National Association of Counties	Steve Mealey
4/16/96	Boise, Idaho	Idaho Natural Resource Conference	Andy Brunelle
4/17/96	Boise, Idaho	Idaho Natural Resource Conference	Steve Mealey
4/17/96	Boise, Idaho	Idaho Forest Products Commission	Steve Mealey
4/18/96	Boise, Idaho	Idaho Attorney General	Steve Mealey
4/22/96	Bonners Ferry, Idaho	Boundary County Commissioners, Public, and BLM/USFS	Steve Mealey
4/22/96	Sandpoint, Idaho	Bonner County Commissioners, Public, and BLM/USFS	Steve Mealey
4/23/96	Orofino, Idaho	Clearwater National Forest Leadership Team	Steve Mealey
4/24/96	Boise, Idaho	Viability Task Force with Regulatory Agencies	Steve Mealey/et al.
4/30/96	Coeur d'Alene, Idaho	Intermountain Forest Industries Association	Steve Mealey
5/7/96	Washington, D.C.	House Subcommittee on Interior Appropriations	Steve Mealey

Resource Advisory Councils

Resource Advisory Councils are groups that advise the BLM and Forest Service on land management programs and issues. Chartered under the Federal Advisory Committee Act, these advisory bodies are made up of local citizens representing a diversity of public land interests. The advisory committees have been briefed by the Project and provided draft versions of the EIS for their review and comment.

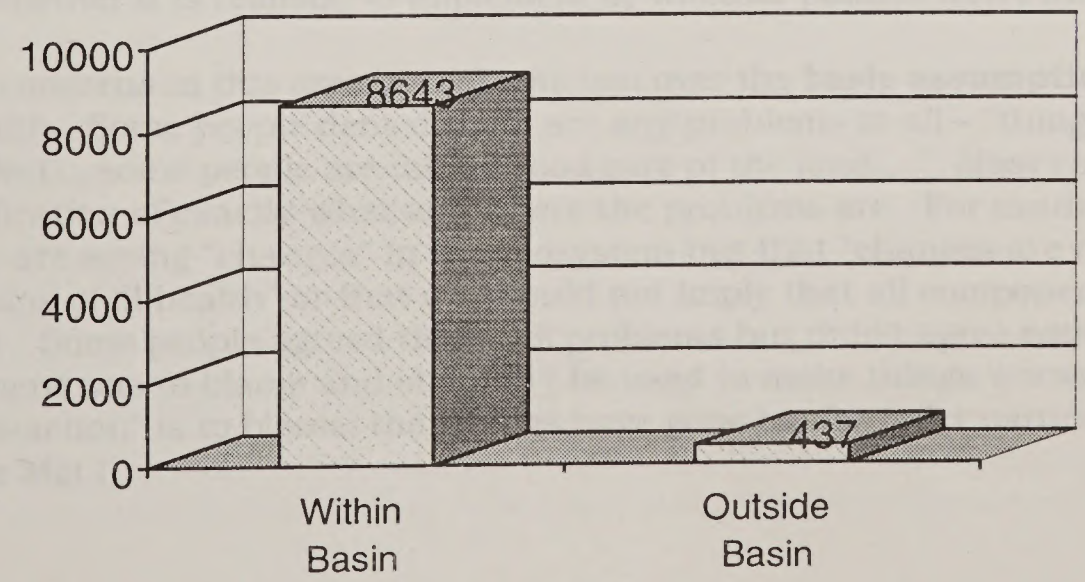
Analysis of Scoping Comments

A total of 9,080 comments were received by the UCRB EIS team by the formal closing of scoping, April 15, 1995.

A Content Analysis Team (CAT) was selected through a letter request to the BLM State Directors and Forest Service Regional Foresters of the upper Columbia Basin. The CAT team read every comment within every letter and classified the nature of the comment as belonging to one of approximately 275 subject categories. The categories had been established in advance by using previous forest and resource management plans and assigning code numbers to primary categories. These codes were used to categorize the substance of the comments in the letters. The code book used by the UCRB CAT team was based on a similar code book developed for the Eastside EIS, with minor adjustments made to suit local needs. Additional numerical codes were used to categorize where the comments came from. The information was entered into a computer data base, which allowed sorting and grouping the comments.

Because of the quantity of material, the process of analyzing the content of the public comments was divided into two sessions. The first session analyzed 5,442 written and oral comments from the beginning of the project through the comments received during the facilitated teleconference meetings. The second session analyzed 3,638 letters or comments generated in response to the teleconference or received between the time of the teleconference and the formal closing of the scoping period on April 15, 1995. It took a total of 792 hours to analyze and code the comments, and 464 hours to enter the data into the computer. All scoping comments were made part of the project planning record.

Comment Distribution: Within/Outside the Columbia River Basin



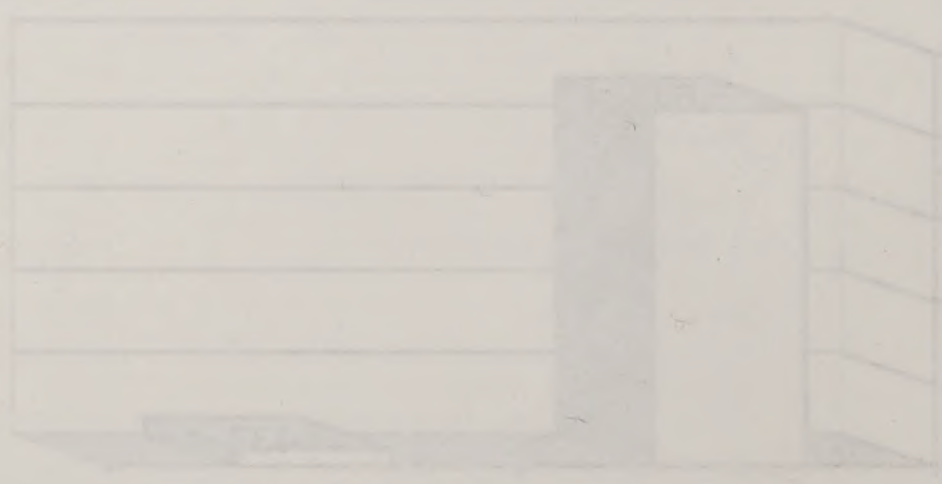
Comments and information received after April 15 were made part of the planning record and were considered and used by members of the EIS team as appropriate.

Members of the CAT team included the following:

Andy Godfrey (first session);
Pat Utick, Salmon/Challis National Forests (first session);
Camilla Cary, Priest Lake Ranger District (first session);
Christine Cary, volunteer for the first session, Forest Service contract for the second session;
Rob Jaggers, Pocatello Resource Area (both sessions);
Kimberly Hackett, Shoshone District Office (first session);
Pete Van Wyhe, Burley District Office (both sessions);
Bill Galligan, North Fork Ranger District (both sessions);
Venetia Gempler, UCRB Public Affairs Team (second session);
Norma Staaf, Salmon/Challis National Forests (first session); and
Sue Tholen, UCRB Public Affairs Team (second session).

Data input specialists hired through a Forest Service contract included:

Sandy Little (both sessions);
Debbie Dye (both sessions);
Lydia Barbee (first session only);
Maxine Erdahl (first session only); and
Carol Kilgore (first session only).



Geographic Distribution of Comments

Number of Comments by State:

Alaska	27	North Carolina	1
Arizona	3	North Dakota	1
California	105	Nevada	226
Colorado	96	New Mexico	4
District of Columbia	66	New York	1
Florida	4	Ohio	8
Georgia	7	Oregon	412
Idaho	4,742	South Dakota	11
Illinois	7	Tennessee	4
Iowa	16	Texas	11
Louisiana	3	Utah	34
Maryland	15	Virginia	1
Massachusetts	12	Washington	399
Michigan	6	Wisconsin	25
Mississippi	3	Wyoming	212
Montana	2,618	**TOTAL**	**9,080**

Summary of Scoping Comments

From more than 2,000 pages of computer printouts of the recorded data, a 41-page Scoping Comment Summary report was prepared for use by the EIS team in developing issues, goals, and alternatives. The complete report is available from the UCRB project office. The following is a summary of the Scoping Comment Summary.

Purpose & Need

Basic Assumptions/HRV/Mistrust/Ecosystem Management

Most people who participated in scoping acknowledged there are changes happening in the ecosystem but disagreed on exactly where, what, why, and how these changes translate into "problems" and disagreed on what should be done about it. A great many comments expressed *disagreement* with the purpose and need, such as: "It doesn't convince me," or it's too detailed, too narrow, shortsighted, misses the point. Fewer but still numerous comments *agreed in general* with the purpose and need as "doing a good job of describing the need for action," but expressed skepticism about whether it is realistic to implement or whether politics won't interfere.

One of the biggest concerns in this area was skepticism over the **basic assumptions** about forest and ecosystem health. Some people denied there are any problems at all-- "things are improving... waterways are perfect... some people are taking good care of the land...." Most comments seemed more to want clarification of exactly what and where the problems are. For example, some acknowledged they are seeing "changes" in the ecosystem but that "changes are natural and not necessarily symptoms of ill health" or that we should not imply that all components everywhere are at the critical point. Some people agreed there are problems but didn't agree with the causes-- some felt management was to blame and shouldn't be used to make things worse, while some felt the "paralysis of no-action" is to blame, that things have gone too far to let nature take its course. (See Active/Passive Mgt.)

Another big concern expressed was over the use of **Historic Range of Variability (HRV)** in defining the purpose and need. There seemed to be a lot of confusion over exactly what it meant, and most people seemed to be taking it to mean "restoring the ecosystems to pre-European condition." Based on that perception, the majority of comments were concerned about the validity, rationale, and science of HRV and said that returning to HRV is "unrealistic, undesirable, and impossible to achieve." They don't want us to assume a "past ecotopia where everything was in harmonic balance," and many people stressed the dynamic nature of ecosystems and that "Things change over time... we can't go back."

Another element in the comments related to purpose and need was a basic **mistrust** -- of government in general, of the Forest Service and/or BLM, of the team leaders and members. A lot of comments asked why we're doing this, since we already have plans that are ignored and not implemented. Some saw the project as an excuse to continue management status quo or to justify accelerated timber harvest and roading. Some insisted the project is a "political sham" and a smokescreen for various hidden agendas.

This mistrust seemed to be the focus for those comments that *generally didn't like* the **ecosystem management approach** at all. Many comments said they want the Forest Service to go back to old management regimes with rangers and local people managing certain specific areas. Some expressed the opinion that ecosystem management must be "proven" before implementing; some expressed a fear that ecosystem management means shifting from a concept of "working forests" to one of "national parks;" and some questioned whether scientific data is sufficient for ecosystem management. Many people also had questions about how something at this broad a scope could and would work at the local level. However, there were many more comments that expressed *general support for ecosystem management* and for conserving, restoring, and maintaining biodiversity and ecosystem health. BUT--even among those supporters were quite a few who still were concerned that we not narrow the focus too much, that we truly consider the whole system, and that we "walk the walk not just talk the talk." Many comments questioned the roles of various agencies in an ecosystem management approach.

A key part of many comments on ecosystem management focused on **disturbance mechanisms** and regimes, including fire, disease, and climate change. Many said they recognized the role of natural disturbance but questioned how we could know historic levels of disturbance. While many expressed a desire to see natural disturbance regimes emphasized; others suggested that disturbances must be controlled to allow for crop yields, commodity production, biological diversity, or protection of human property. Numerous comments focused on the role of fire and fire management, ranging from "Leave the forests alone" to "We need to implement immediate active management." Much debate focused on fire vs. logging as management techniques to mimic natural disturbance. Some asked for identification of socially acceptable patterns of social, economic, and biophysical disturbances and a discussion of levels of risk.

Communications and Public Involvement

A strong concern was expressed for better communications, better explanation of terms and concepts, better and earlier public involvement. Most people who participated in the **video teleconference** liked the format, though there were many constructive criticisms for next time. A major problem identified with the scoping process was not enough time for people to review documents before the teleconference event. Many cited inadequate notice and media coverage of the teleconference and other project activities.

Regarding **terminology**, many comments indicated concerns similar to: "the technical language appears to the public as a scientific mask that the establishment is hiding behind." Among the terms and concepts frequently mentioned as needing explanation were biological diversity, community stability, disturbance, ecosystem, ecosystem/ecological integrity/health, ecosystem process/function, human needs and desires, resiliency, restoration, riparian zone, sustainability,

wetland. Many comments indicated a need for clarification on the NEPA process, public forest and range management policy, ecological and biological concepts, studies and research in forest health and other topics, the roles of Federal and State agencies in the ecosystem management process, and the decision-making process, among other topics.

Quite a few comments addressed **education** as a communications tool, suggesting a need for aggressive education programs for rural and urban public audiences about resource management and consequences, multiple benefits of habitat protection for humans as well as wildlife, logging methods, community cultures and social issues, economics, role of fire, role of insects and disease, impacts of human activities, and ecosystem principles.

Active Management/Passive Management/ Adaptive Management

Many felt that "human management should be minimal--the goal should be to eliminate it" and that we should *let nature take its course*, not interfering with natural processes. Some said to stop active management and "overmanaging" and instead manage the people who would damage public lands. Some stated it's impossible to generate a natural system by manipulation and that we should "adopt benign neglect as the preferred alternative." Many called for analysis of ecological damage due to past management activities. Many other comments *favored actively managed ecosystems* where we plan for active and intensive forest and range management and recovery of resources. Among these comments, several noted we can have healthy ecosystems with reduced risks (including fire and disease) with good active management. Many stated that proper management must mean long-term sustainability and must recognize the dynamic nature of ecosystems over time. A number of comments called for neither active nor passive management but rather holistic and *adaptive management* with extensive monitoring in order to deal with scientific uncertainty and changing conditions.

There was a wide spectrum of public views specifically focused on **road management**. Many people expressed a desire for more emphasis on access to public lands for their livelihood and recreation, more roads constructed, and more roads kept open and repaired. Others suggested that road densities should be reduced, with priorities and guidelines established for road reductions, better enforcement and monitoring of closures, reclamation, no new roads, and staying out of roadless or unroaded areas to prevent further habitat fragmentation and other effects. Controversy exists over the damage roads have caused in the past and over the potential environmental risks from using existing roads or constructing new roads to accomplish future restoration and management versus the risks associated with lack of road access.

Wildlife/Vegetation Diversity/Habitat/Core Reserves

Concerns ranged from requests to make the preservation or conservation of all **native species** a priority, to requests that humans be the only organisms considered to be of consequence in management of public lands. The conservation of *all existing native species* was a priority with many who saw human health linked with that of the land and all organisms on it. Some favored a less comprehensive approach, emphasizing *recovery of declining species*, such as salmon, and especially those species listed as threatened or endangered. Many saw the maintenance of viable populations as a means to avoid future T&E listings. Many urged *management of habitat and the ecosystem, not the individual species*. Others were more concerned with the costs associated with species viability issues, and urged that economic impacts to human societies be carefully considered and given preference over species viability concerns. Some comments expressed the belief that there is *too much emphasis on non-human organisms* and not enough consideration being given to people.

The use of **large wild areas with connecting corridors, unique areas, and core reserves** to protect species and habitat viability is viewed by some as both desirable and consistent with ecosystem management. Strong feelings were expressed about protection of the "Big Wild" complex in the northern Rockies. Some comments provided extensive suggestions for design, placement, and management of core reserves, buffers, corridors, and other protected areas. Others saw reserves as undesirable and inconsistent with ecosystem management and natural processes, and they suggested that special reserve areas not be used as a tool to restore ecosystem integrity. Many suggested that "conservation not preservation" should be the goal and that the EIS should consider all Federal lands for management and commodity outputs even if current management is wild, roadless, Wilderness, or riparian.

Size/Scale/Scope/Priorities/Timelines

A great many comments addressed the **scale and scope** of the project. Many comments expressed the opinion that the project *scale is too large* to make meaningful conclusions about ecosystem health and that there is a need for additional planning and public involvement at more site-specific levels. Many said that "one size doesn't fit all" and several questioned whether the broad scale will actually solve the problems. Numerous other comments suggested that the scope of the project is *too small* and that the entire river basin should be considered as a whole, not split between Eastside and UCRB, and that the analysis should not be too site-specific but leave flexibility for local managers. Many pointed to a need to have the analyses consider the whole picture, including landscape mosaics and the whole ecosystem, basin wide and at multiple scales. In some comments the scale was said to be *appropriate*, positive, and "long overdue," but concerns were expressed that "what is feasible and realistic" be diagnosed and that we "take the time to do a good job."

Priorities and time frames: Comments indicate controversy over whether any single resource such as declining species should be given top priority and focus for recovery, or whether the entire ecosystem should be managed with equal emphasis. (See Wildlife/Vegetation Diversity/ Habitat.) The controversy includes questions regarding which resources or what species should be given focus, and where or which part of the ecosystem is more or less important. For example, some commented that streams, watersheds, riparian areas, fisheries, and water quality have the most important need for restoration; others said the ecological importance of unroaded areas is key and should be given top priority; some said economic needs and needs of humans should be given more priority over other ecosystem needs; others suggested that priority be given to areas highly affected by past management activities. Many suggested the time frames are too long; others questioned how restoration objectives could be achieved "in only 20 years."

Human Needs/Communities/Social-economic Concerns

A great many comments expressed a concern that *human needs have been underestimated* and should be considered a first priority or a more important component and analyzed in depth in a meaningful way. Stability of human communities, social and economic concerns, human health and social needs, and availability of resources for public use were among the major concerns expressed. Some expressed a concern that a regional ecosystem approach will mask local economic and community impacts. A great many other comments expressed the opinion that *resources and long-term sustainability should have first priority* over human needs, agendas, commodity targets, and special interests, and asked that the area "be protected from humans." Many comments addressed the idea of *balance and cooperation* between the needs of all users and between human needs and ecosystem integrity, tying human and ecosystem health closely together. Many asked that the multiple-use vision of both agencies be maintained, but opinions of what "multiple-use" means differed among respondents.

In particular, many comments expressed a desire for management of public lands to meet current economic needs and sustain rural communities by: (1) managing for predictable or stable output levels; (2) maintaining traditional enterprises including timber, grazing, and mining; (3) helping to

maintain the rural way of life, customs and culture; and (4) finding ways to offset local governmental revenue losses when traditional economic activities are reduced to remedy ecosystem health problems. Many others favored diverse economies, amenity-based recreation and tourism, and other businesses based on quality of life and amenity values. Many want the agencies to enhance environmental health without losing the cultural heritage of rural settings by managing for both healthy ecosystems and a robust economy, suggesting that enhancement of environmental conditions means more jobs in recreation and tourism (and, over the long run, more predictable employment in commodity production) and that restoration work will create jobs. Many comments disagreed emphatically with the latter approach stating that recreation, tourism, and restoration jobs do not compare favorably with commodity-based jobs. Others objected to an emphasis on recreation because of impacts to the environment.

A major concern was expressed over impacts of ecosystem management on **private lands**, including inholder rights and investments, water rights, compensation, protection of private property, and infringements on private, state, county, or local rights, privileges, and programs. A number of other comments addressed the impacts from private lands on effective ecosystem management and asked that this be evaluated in the EIS.

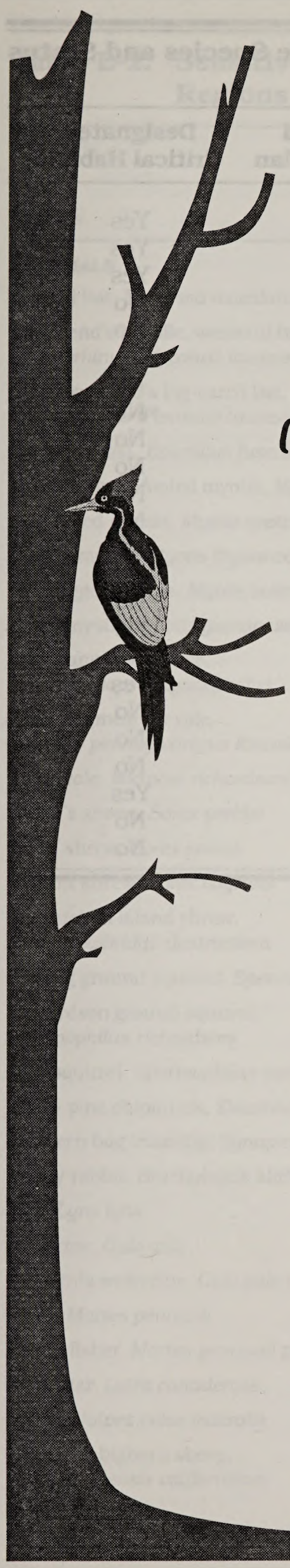
Numerous comments focused on **local values, conditions, and control** of management. Some asked how conflicts between local and downstream concerns will be resolved. Many asked for *more local input*, local surveys, local and cultural needs to be a priority, more and better public involvement, and putting "the people and communities back in control of planning." Some felt there is "too much emphasis on urban public perceptions;" some asked about effects on local ranger districts and preferred local authority for decisions be left in the hands of the forest supervisor with local input. Many others suggested a need to *emphasize regional, national, and other* values in the EIS, specifically: "Emphasize the needs of the nation over the desires of a few who want to return the area to pre-European intrusion;" "Local control would not provide protection but be managed for profit;" "Use geographical comparison to determine suitability of the industries now in the study area;" and "Stop timber and mining contracts until cleanups and compensation to State and Federal treasuries are complete."

The Role Of Science

Many comments supported the scientific approach but insisted that it be the "best science... truthful, unbiased, and kept separate from politics." There were many comments that expressed dissatisfaction with the proposed action having specific numbers and outputs before the Assessment is complete. There also were quite a few comments that expressed a need for more emphasis on experience, local knowledge, and common sense rather than "book learning." Some took issue with the scientific information about ecosystem health decline (see assumptions, above). A few suggested you can't combine science with spiritual and cultural needs and you can't combine "real science" with economics. Quite a few comments simply asked for clarification of the role of science in the process and how the public could be more involved.

Input on a Preferred Alternative for the Draft EIS

The Project's Executive Steering Committee decided to solicit input on a preferred alternative as part of their intergovernmental coordination efforts before making their selection. Preliminary copies of the DEIS were shared with States, tribes, Resource Advisory Councils, Provincial Advisory Committees, and the Coalition of Counties. The Executive Steering Committee met with most of these groups to solicit their input. Some groups recommended that a specific alternative be selected as the preferred; they also included changes or issues they wished to have addressed. Other groups chose to list the concerns they had with one or more of the alternatives and did not recommend a preferred alternative.



Appendix E Special Status Species and Recovery Maps

(Comparable to Eastside Appendix 2-1)

This Appendix contains the following items:

- *Threatened, endangered, proposed or candidate species and status of recovery plans, in the UCRB Planning area.*
- *List of Sensitive Species*
- *Maps*
  - *Snake River Chinook Salmon and Snake River Sockeye Salmon,*
  - *Grizzly Bear Recovery Zones (5 maps),*
  - *Wolf Recovery Areas, and*
  - *Threatened and Endangered Aquatic Mollusks*

Table E-1. Threatened, Endangered, Proposed, or Candidate Species and Status of Recovery Plans, UCRB.

Species Name	Federal Listing Status	Approved Recovery Plan	Designated Critical Habitat
Snake River fall chinook	Threatened	No	Yes
Snake River spring/summer chinook	Threatened	No	Yes
Snake River sockeye salmon	Endangered	No	Yes
Steelhead	Proposed	No	No
Bull trout	Candidate	No	No
Kootenai River white sturgeon	Endangered	No	No
Idaho springsnail	Endangered	Yes	No
Utah valvata snail	Endangered	Yes	No
Snake River physa snail	Endangered	Yes	No
Banbury springs lanx	Endangered	Yes	No
Bruneau hot springsnail	Endangered	No	No
Bliss Rapids snail	Threatened	Yes	No
Spotted frog	Candidate	No	No
Northern Idaho ground squirrel	Candidate	No	No
Grizzly bear	Threatened	Yes	No
Woodland caribou	Endangered	Yes	No
Gray wolf	Endangered	Yes	No
Whooping crane	Endangered	Yes	Yes
Mountain plover	Candidate	No	No
Bald eagle	Threatened	Yes	No
Peregrine falcon	Endangered	Yes	No
MacFarlane's four-o'clock	Threatened	Yes	Yes
Ute's lady tresses	Threatened	No	No
Christ's paintbrush	Candidate	No	No

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

Species	BLM						Forest Service Region		
	OR/WA	WY	MT	ID	NV	UT	R 1	R 4	R 6
MAMMALS									
spotted bat, *Euderma maculatum*	x	x		x	x	x		x	
Townsend's (Pacific, western) big-eared bat, *Corynorhinus (Plecotus) townsendii townsendii*	x	x	x	x	x		x	x	x
pale Townsend's big-eared bat, *Corynorhinus (Plecotus) townsendii pallescens*			x		x				
big brown bat, *Eptesicus fuscus*		x							
western small-footed myotis, *Myotis ciliolabrum*	x	x	x	x	x				
long-eared myotis, *Myotis evotis*	x	x	x	x	x				
fringed myotis, *Myotis thysanodes*	x	x		x	x				
long-legged myotis, *Myotis volans*	x	x	x	x	x				
Yuma myotis, *Myotis yumaensis*	x		x	x	x				
dark kangaroo mouse, *Microdipodops megacephalus*				x					
Kincaid's meadow vole, *Microtus pennsylvanicus kincaidi*	x								
water vole, *Microtus richardsoni*		x							
Preble's shrew, *Sorex preblei*	x	x	x		x				x
dwarf shrew, *Sorex nanus*		x				x			
vagrant shrew, *Sorex vagrans*		x							
Destruction Island shrew, *Sorex trowbridgii destructioni*	x								
Belding ground squirrel, *Spermophilus beldingi*						x			
Richardson ground squirrel, *Spermophilus richardsoni*						x			
rock squirrel, *Spermophilus variegatus*				x					
yellow pine chipmunk, *Eutamius amoenus*						x			
northern bog lemming, *Synaptomys borealis*			x				x		
pygmy rabbit, *Brachylagus idahoensis*	x	x	x	x	x				x
lynx, *Lynx lynx*	x	x	x	x	x	x	x	x	x
wolverine, *Gulo gulo*		x	x	x	x	x	x	x	
California wolverine, *Gulo gulo luteus*	x								x
fisher, *Martes pennanti*	x		x	x			x	x	
Pacific fisher, *Martes pennanti pacifica*	x								
river otter, *Lutra canadensis*						x			
kit fox, *Vulpes velox macrotis*	x			x					
California bighorn sheep, *Ovis canadensis californiana*	x			x	x				x

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

Species	BLM						Forest Service Region		
	OR/WA	WY	MT	ID	NV	UT	R 1	R 4	R 6
BIRDS									
common loon, *Gavia immer*		x	x				x	x	x
red-necked grebe, *Podiceps grisegena*	x								
American white pelican, *Pelecanus erythrorhynchos*		x				x			x
trumpeter swan, *Cygnus buccinator*		x		x				x	
Caspian tern, *Sterna caspia*		x							
black tern, *Chlidonias niger*	x	x	x		x				
Forster's tern, *Sterna forsteri*		x							
snowy egret, *Egretta thula*		x							
white-faced ibis, *Plegadis chihi*	x	x			x				
black-crowned night heron, *Nycticorax nycticorax*		x							
harlequin duck, *Histrionicus histrionicus*	x	x	x	x	x		x	x	
marbled murrelet, *Brachyramphus marmoratus*									x
American bittern, *Botarus lentiginosus*		x							
least bittern, *Ixobrychus exilis*	x				x				
western least bittern, *Ixobrychus exilis hesperis*	x								
yellow rail, *Coturnicops noveboracensis*	x								
greater sandhill crane, *Grus canadensis tabida*									x
long-billed curlew, *Numenius americanus*		x	x	x		x			x
upland sandpiper, *Bartramia longicauda*				x					x
snowy plover, *Charadrius alexandrinus*	x								
mountain plover, *Charadrius montanus*		x				x	x		
flammulated owl, *Otus flammeolus*	x		x	x			x	x	
great gray owl, *Strix nebulosa*			x					x	
boreal owl, *Aegolius funereus*			x	x			x	x	
burrowing owl, *Speotyto (=Athene) cunicularia*	x				x				
western burrowing owl, *Speotyto (=Athene) cunicularia hypugea*	x			x	x				
northern goshawk, *Accipiter gentilis*	x	x	x	x	x			x	
prairie falcon, *Falco mexicanus*				x					
merlin, *Falco columbarius*		x							
ferruginous hawk, *Buteo regalia*	x	x		x	x	x	x		x
Swainson's hawk, *Buteo swainsoni*			x			x			
osprey, *Pandion haliaetus*						x			
northern harrier, *Circus cyaneus*				x					
white-headed woodpecker, *Picoides albolarvatus*	x			x			x	x	

Species	BLM						Forest Service Region		
	OR/WA	WY	MT	ID	NV	UT	R 1	R 4	R 6
three-toed woodpecker, *Picoides tridactylus*	x		x	x				x	
black-backed woodpecker, *Picoides arcticus*	x		x	x			x		
hairy woodpecker, *Picoides villosus*			x						
Lewis' woodpecker, *Melanerpes lewis*	x	x		x		x			
pileated woodpecker, *Dryocopus pileatus*	x		x						
red-naped woodpecker, *Sphyrapicus nuchalis*				x					
Williamson's sapsucker, *Sphyrapicus throideus*				x					
mountain quail, *Oerortyx pictus*				x			x	x	
Columbian sharp-tailed grouse, *Tympanuchus phasianellus columbianus*	x		x	x	x		x	x	
western sage grouse, *Centrocercus urophasianus*	x			x					x
tricolored blackbird, *Agelaius tricolor*	x				x				x
yellow-headed blackbird, *Xanthocephalus xanthocephalus*				x					
black rosy finch, *Leucosticte arctoa atrata*									x
yellow-billed cuckoo, *Coccyzus americanus*	x			x					
black-billed cuckoo, *Coccyzus erythropthalmus*				x					
pygmy nuthatch, *Sitta pygmaea*				x					
loggerhead shrike, *Lanus ludovicianus*				x					
Vaux's swift, *Chaetura vauxi*				x					
black swift, *Cypseloides niger*				x					
ash-throated flycatcher, *Myiarchus cinerascens*		x							
olive-sided flycatcher, *Contopus boralis*				x					
dusky flycatcher, *Empidonax oberholseri*				x					
Cordilleran flycatcher, *Empidonax occidentalis*				x					
Hammond's flycatcher, *Empidonax hammondii*				x					
gray flycatcher, *Empidonax wrightii*				x					
willow flycatcher, *Empidonax traillii*				x					
little willow flycatcher, *Empidonax traillii brewsteri*	x								
southwestern willow flycatcher, *Empidonax traillii extimus*					x				
black-throated gray warbler, *Dendroica nigrescens*				x					
Townsend's warbler, *Dendroica townsendii*				x					
yellow warbler, *Dendroica petechia*				x					
MacGillivray's warbler, *Oporonis tolmiei*				x					
Virginia's warbler, *Vermivora virginiae*				x					
Wilson's warbler, *Wilsonia pusilla*				x					
western bluebird, *Sialia mexicana*					x				
purple martin, *Progne subis*	x				x				
Bell's vireo, *Vireo bellii*					x				

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

Species	BLM						Forest Service Region		
	OR/WA	WY	MT	ID	NV	UT	R 1	R 4	R 6
solitary vireo, *Vireo solitarius*				x					
bobolink, *Dolichonyx oryzivorus*				x					
Scott's oriole, *Icterus pusilla*		x		x					
veery, *Catharus fuscescens*				x					
Swainson's thrush, *Catharus ustulatus*				x					
Calliope hummingbird, *Stellula caliope*				x					
rufous hummingbird, *Selaphorus rufus*				x					
grasshopper sparrow, *Ammodramus savannarum*				x	x				
Brewer's sparrow, *Spizella breweri*				x					
sage sparrow, *Amphispiza belli*				x					
scrub jay, *Aphelocoma coerulescens*		x							
plain titmouse, *Parus inornatus*		x							
bushtit, *Psalriparus minimus*		x							
green-tailed towhee, *Pipilo chlorurus*				x					
REPTILES AND AMPHIBIANS									
northern red-legged frog, *Rana auroa auroa*	x			x					x
mountain yellow-legged frog, *Rana muscosa*					x				
Cascades frog, *Rana cascadae*	x								
northern leopard frog, *Rana pipiens*	x								
tailed frog, *Ascaphus truei*	x		x						
wood frog, *Rana sylvaica*			x						
Pacific tree frog, *Hyla regilla*						x			
western toad, *Bufo boreas*				x					
Coeur d'Alene salamander, *Plethodon vandykei idahoensis*			x	x				x	
Cope's giant salamander, *Dicamptodon copei*									x
Larch Mountain salamander, *Plethodon larseii*	x								x
painted turtle, *Chrysemys picta*	x								x
western pond turtle, *Clemmys marmorata*	x								
northwestern pond turtle, *Clemmys marmorata marmorata*					x				x
northern sagebrush lizard, *Sceloporus graciosus graciosus*	x								
many-lined skink, *Emeces multivirgatus gaigei*						x			
Mojave black-collared lizard, *Crotahytus bicinctores*				x					

Species	BLM OR/WA	WY	MT	ID	NV	UT	Forest Service Region R 1	R 4	R 6
western ground snake, *Sonora seminannulata*				x					
ringneck snake, *Diadophis punctatus*				x					
longnose snake, *Rhinocheilus lecontei*				x					
FISH									
Malheur mottled sculpin, *Cottus bairdii* spp.	x								x
Shoshone sculpin, *Cottus greenei*				x					
Wood River sculpin, *Cottus leiopomus*				x				x	
torrent sculpin, *Cottus rhotheus*							x		
shorthead sculpin, *Cottus coniusus*				x			x		
pit sculpin, *Cottus pitensis*									x
slender sculpin, *Cottus tenuis*									x
margined sculpin, *Cottus marginatus*	x								
westslope cutthroat trout, *Oncorhynchus clarki lewisi*	x		x	x			x	x	
Bonneville/Utah cutthroat trout, *Oncorhynchus clarki utah*				x	x	x		x	
Yellowstone cutthroat trout, *Oncorhynchus clarki bouvieri*				x					
fine spotted cutthroat trout, *Oncorhynchus clarki* ssp.								x	
interior reband trout, *Oncorhynchus mykiss* ssp.	x			x	x		x		x
Catlow Valley redband trout, *Oncorhynchus mykiss* ssp.	x								
Goose Lake redband trout, *Oncorhynchus mykiss* ssp.	x								
Warner Valley redband trout, *Oncorhynchus mykiss* ssp.	x				x				
spring/summer chinook salmon, *Oncorhynchus tshawyscha*	x			x			x		x
coho salmon, *Oncorhynchus kisutch* ssp.	x								x
Alvord chub, *Gila alvordensis*	x				x				
Oregon tui chub, *Gila bicolor oregonensis*	x								x
Sheldon tui chub, *Gila bicolor eurysoma*	x				x				
Catlow tui chub, *Gila bicolor* ssp.	x								
summer basin tui chub, *Gila bicolor* ssp.	x								
leatherside chub, *Gila copei*				x	x	x			
roundtail chub, *Gila robusta robusta*					x	x			
white sturgeon, *Acipenser transmontanus*				x			x		
Goose Lake sucker, *Catostomus occidentalis lacusanerinus*	x								x
Klamath large-scale sucker, *Catostomus synderi*	x								x

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

Species	BLM						Forest Service Region		
	OR/WA	WY	MT	ID	NV	UT	R 1	R 4	R 6
Jenny Creek sucker, *Catostomus rimiculus ssp.*	x								
river lamprey, *Lampetra ayresi*									
Miller Lake lamprey, *Lampetra minima*	x								
Pacific lamprey, *Lampetra tridentata*	x			x					
Goose Lake lamprey, *Lampetra tridentata ssp.*	x								
pit roach, *Lavinia symmetricus mitrulus*	x								
Olympic mudminnow, *Novumbra hubbsi*	x								
ling (burbot), *Lota lota*				x			x		
VASCULAR PLANTS/ BRYOPHYTES/LICHENS/FUNGI									
Henderson's ricegrass, *Achnatherum hendersonii* (=*Oryzopsis hendersonii*)	x								x
Wallowa ricegrass, *Achnatherum wallowensis*	x								
Adiantum pedatum var. novum							x		
Adoxa moschaielina							x		
Agoseris elata									x
pink agoseris, *Agoseris lackschewitzii*				x			x	x	
Agrostis borealis									x
Agrostis oregonensis							x		
Aaese's onion, *Allium aaseae*				x					
Allium acuminatum							x		
two-headed onion, *Allium anceps*				x					
Allium brandegei									x
Allium campanulatum	x								x
Allium constrictum	x								
Allium dictuon	x								x
Allium fibrilium							x		
Allium geyeri var. geyeri									x
swamp onion, *Allium madidum*								x	
Tolmie's onion, *Allium tolmiei var. persimile*				x				x	
tall swamp onion, *Allium validum*				x			x		
candystick, *Allotropa virgata*				x			x	x	
Malheur Valley fiddleneck, *Amsinckia carinata*	x								
Anemone nuttalliana									x
Antennaria arcuata		x		x	x			x	
Antennaria aromatica									x
Antennaria corymbosa									x
Antennaria densifolia							x		

Species	BLM OR/WA	WY	MT	ID	NV	UT	Forest Service Region R 1	R 4	R 6
Antennaria parvifolia									x
Aquilegia brevistyla							x		
Arabis falcatoria					x	x			
Arabis fecunda							x		
Crater Lake rockcress, *Arabis suffrutescens var. horizontalis*	x								
Thompson's sandwort, *Arenaria franklinii var. thompsonii*	x								
armed prickly poppy, *Argemone munita*				x					
Arnica alpina var. tomentosa							x		
Arnica viscosa									x
Artemisia campetris spp. *borealis* & var. *wormskioldii*	x								x
Artemisia ludoviciana estesii	x								x
green-flowered wild ginger, *Asarum wagneri*	x								
coral lichen, *Aspicilia fruticulosa*				x					
Asplenium trichomanes-ramisum				x					
Asplenium triphomanes							x		
Asplenium viride									x
Aster gormanii									x
Aster jessicae	x			x					
Aster sibiricus var. *meritus*									x
Challis milk-vetch, *Astragalus amblytropis*				x					
Lost River milk-vetch, *Astragalus amnis-amissi*								x	
Goose Creek milk-vetch, *Astragalus anserinus*				x	x	x		x	
Lemhi milk-vetch, *Astragalus aquilonius*				x				x	
Astragalus arrectus									x
Astragalus arthuri									x
mourning milk-vetch, *Astragalus atratus var.inseptus*				x					
Astragalus atratus var. owyheensis									x
Laurence's milk-vetch, *Astragalus collinus var. laurentii*	x								
Columbia milk-vetch, *Astragalus columbianus*	x								
Astragalus cusickii									x
Astragalus diaphanus var. diurnus	x								x
mesic milk-vetch, *Astragalus diversifolius*				x				x	
Big Piney milk-vetch, *Astragalus drabelliformis*		x							
plains milk-vetch, *Astragalus gilviflorus*				x					
Astragalus howellii	x								x
starveling milk-vetch, *Astragalus jejunus jejunus*				x					
Douglas' milk-vetch, *Astragalus kentrophyta var.douglasii*	x								

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

	BLM						Forest Service Region		
Species	OR/WA	WY	MT	ID	NV	UT	R 1	R 4	R 6
park milk-vetch, *Astragalus leptaleus*				x					
Astragalus molybdenus							x		
Mulford's milk-vetch, *Astragalus mulfordiae*	x			x					
Newberry's milk-vetch, *Astragalus newberryi castoreus*				x					
Picabo milk-vetch, *Astragalus onciformis*				x					
Payson's milk-vetch, *Astragalus paysonii*				x			x	x	
Astragalus peckii	x								x
Ames' milk-vetch, *Astragalus pulsiferae var.suksdorfi*	x								
Snake River milk-vetch, *Astragalus purshii ophiogenes*				x					
Trout Creek milk-vetch, *Astragalus salmonis*				x					
whited milk-vetch, *Astragalus sinuatus*	x								
sterile milk-vetch, *Astragalus sterilis*	x			x					
Astragalus tegetarioides	x								x
four-wing milk-vetch, *Astragalus tetrapterus*				x					
Tygh Valley milk-vetch, *Astragalus tyghensis*	x								
White Cloud milk-vetch, *Astragalus vexilliflexus var. nubilus*								x	
Osgood Mtns./ Mud flat milk-vetch, *Astragalus yoder-williamsii*				x	x			x	
Athysanus puelius							x		
Betula pumlia							x		
Betula papyrifera var. commutata									x
Blechnum aploant							x		
deer fern, *Blechnum spicant*				x					
king's desertgrass, *Blepharidachne kingii*				x					
Botrychium ascendens	x			x			x		x
Botrychium crenulatum	x			x			x		x
Botrychium hesperium							x		
Botrychium lanceolatum var. lanceolatum				x			x		x
Botrychium lunaria									x
Botrychium minganense				x			x		x
Botrychium montanum							x		x
paradox moonwart, *Botrychium paradoxum*	x						x		
stalked moonwort, *Botrychium pedunculosum*	x								x
Botrychium pinnatum				x			x		x
pumice grape-fern, *Botrychium pumicola*	x								x

Species	BLM						Forest Service Region		
	OR/WA	WY	MT	ID	NV	UT	R 1	R 4	R 6
Botrychium simplex				x			x		x
blue gramma, *Bouteloua gracilis*				x					
Bryum calobryoides				x				x	
Bupleurum americanum									x
leafless bug-on-a-stick, *Buxbaumia aphylla*				x					
Piper's bug-on-a-stick, *Buxbaumia piperi*				x					
Calamagrostis breweri									x
Cascade reedgrass, *Calamagrostis tweedyi*				x				x	
Calliergon trifarum	x								
Greene's mariposa lili, *Calochortus greenei*	x								
long-bearded mariposa lily, *Calochortus longebarbatus var. longebarbatus*	x								x
Peck's mariposa lily, *Calochortus longebarbatus var. peckii*	x								x
Calochortus macrocarpus var. maculosus				x					x
broad-fruit mariposa lily, *Calochortus nitidus*	x			x			x		x
Cusick camas, *Camassia cusickii*				x				x	
obscure evening primrose, *Camissonia andina*			x						
Palmer's evening primrose, *Camissonia palmeri*				x					
winged seed evening primrose, *Camissonia pterosperma*				x					
dwarf evening primrose, *Camissonia pygmaea*	x								
Campanula scabrella									x
Constance's bittercress, *Cardamine constancei*				x			x		
Carex atrata var. erecta									x
Carex buxbaumii				x			x		x
Carex californica							x		
Carex chordorrhiza				x			x		
Carex comosa				x			x		x
Carex concinna									x
Carex flava				x					x
Carex hendersonii				x			x		
Carex hystricina									x
Idaho sedge, *Carex idahoa*				x					
Carex incurviformis								x	
Carex interrupta									x
Carex livida				x			x		x
Carex macrochaeta									x
Carex nova									x
Carex novegica									x
Carex parvana ssp. *idahoa*							x		
Carex paupercula							x		x

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

Species	BLM						Forest Service Region		
	OR/WA	WY	MT	ID	NV	UT	R 1	R 4	R 6
Carex proposita									x
Carex saxatillis var. *major*									x
Carex scirpoidea var. *scirpoidea*									x
Carex scopulorum var. *prionophylla*									x
Carex straminiformis				x					
Carex stylosa									x
Carex synchnocephala									x
Castilleja chlorotica	x								x
Castilleja covilieana							x		
Castilleja crypthantha	x								x
Castilleja fraterna	x								x
Castilleja pilosa var.steenensis	x								
Castilleja rubida	x								x
Castilleja torglapica							x		
Ceanothus prostratus				x					
Cetraria subalpina				x					
Chaenactis cusickii	x			x					
Chaenactis stevioides				x					
Chaenactis thompsonii									x
Cheilanthes feei									x
Liverwort, *Chiloscyphus gemmiparus*	x								
Chrysosplenium tetrandrum									x
Chrysothamnus nauseosus var. *nanus*				x					
Chrysothamnus parryi montanus				x					
Cicuta bulbifera				x					x
Cimicifuga elata	x								
Cladonia anderegii				x					
Cladonia luteoalba				x					
Cladonia transcendens				x					
Cladonia uncialis				x					
Cleomella plocasperma				x					
Clouta bulbiera							x		
Clarkia rhomboidea							x		
short-spored jelly lichen, *Collema curtisporum*				x					
scurfy jelly lichen, *Collema furfuraceum*				x					
flexible alpine collomia, *Collomia debilis camporum*								x	
Mt. Mazama collomia, *Collomia mazama*	x								
Barren Valley collomia, *Collomia renacta*	x								

Species	BLM OR/WA	WY	MT	ID	NV	UT	Forest Service Region R 1	R 4	R 6
Pacific dogwood, *Cornus nuttalii*				x			x		
Corydalis aquae-gelidae									x
Corydalis caseana hastata				x					
Coryphantha vivipara				x					
Crepis bakeri idahoensis				x					
Cryptantha caespitosa				x					
Cryptogramma stelleri									x
sepal-tooth dodder, *Cuscuta denticulata*				x					
greeley's wavewing, *Cymopterus acaulis var. greeleyorum*				x					
Davis' wavewing, *Cymopterus davisii*								x	
Douglass' biscuitroot, *Cymopterus douglasii*								x	
Cymopterus ibapensis				x					
Cymopterus nivalis									x
Cypripedium calceolus var. *parviflorum*	x						x		x
Cypripedium fasciculatum	x			x			x		
Cypripedium parviflorum				x					
Cypripedium passerinum							x		
Dasynotus daubenmirei							x		
white rock larkspur, *Delphinium leucophaeum*	x								
Wenatchee larkspur, *Delphinium viridescens*	x								x
Dermatocarpon lorenzianum				x					
Dimeresia howellii				x					
frigid shootingstar, *Dodecatheon austrofrigidum*	x								
Dodecatheon pulchellum var. watsonii									x
Idaho douglasia, *Douglasia idahoensis*							x	x	
Downingia bacigalupii				x					
Draba aurea									x
Draba cana (=lanceolata)									x
Rockcress draba, *Draba densifolia apiculata*								x	
Yellowstone draba, *Draba incerta*				x					
Stanley's whitlow-grass, *Draba trichocarpa*								x	
Drosera intermedia							x		
Drosera linearis							x		
Dryas drummondii									x
Dryopteris cristata							x		x
Dryopteris filix-mas									x
Eatonella nivea				x					
Elaeagnus commutata				x					
Eleocharis atropurpurea									x
Elymus innovatus							x		

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

	BLM						Forest Service Region		
Species	**OR/WA**	**WY**	**MT**	**ID**	**NV**	**UT**	**R 1**	**R 4**	**R 6**
Epilobium palustre				x			x		
Epipactis algenion							x		
Epipactis gigantea				x					x
Erigeron acris var. *elatus*									x
Erigeron asperugineus							x		
Erigeron engelmannii var. *davisii*									x
Erigeron evermannii							x		
Erigeron howellii	x								x
Erigeron humilis									x
Erigeron latus					x				
Erigeron linearia							x		
Erigeron oreganus	x								x
desert buckwheat, *Eriogonum brevicaule desertorum*								x	
Welsh buckwheat, *Eriogonum capistratum welshii*				x				x	
golden buckwheat, *Eriogonum chrysops*	x								
Crosby's buckwheat, *Eriogonum crosbyae*	x								
Cusick's buckwheat, *Eriogonum cusickii*	x								
desert buckwheat, *Eriogonum desertorum*				x					
Lewis buckwheat, *Eriogonum lewisii*					x			x	
guardian buckwheat, *Eriogonum meledonum*								x	
Eriogonum ochrocephalum calcareum				x					
Eriogonum prociduum	x				x				x
Eriogonum salicornioides	x								
Eriogonum shockleyi packardiae				x					
Eriogonum shockleyi shockleyi				x					
Eriophorum viridicarinatum							x		x
Eritrichium nanum var. *elongatum*									x
Eryngium petiolatum	x								
Eupatorium occidentale							x		
Filipendula occidentalis	x								
Gaultheria hispidula							x		x
Gentiana newberryi									x
Gentianopala simplex							x		
Geum rivale									x
Geum rossii var. *depressum*									x
Geum rossii var. *turbinatum*									x

Species	BLM						Forest Service Region		
	OR/WA	WY	MT	ID	NV	UT	R 1	R 4	R 6
Githopsis specularioides									x
Glyptopleura marginata				x					
Goodyera repens							x		
Grindelia howelli				x			x		
Hackelia cronquistii	x			x					
Hackelia diffusa var. *diffusa*									x
Hackelia hispida var. *disjuncta*									x
Hackelia ophiobia				x					
Hackelia venusta	x								x
Halimolobos perplexa var. lemhiensis							x		
puzzling halimolobos, *Halimolobos perplexa var. perplexa*				x			x	x	
Haplopappus aberrane							x		
sticky goldenweed, *Haplopappus hirtus sonchifolius*				x					
bugleg goldenweed, *Haplopappus insecticruris*				x				x	
Palouse goldenweed, *Haplopappus liatriformis*	x			x					x
Haplopappus macronema var. macronema							x		
radiate goldenweed/Snake River goldenweed, *Haplopappus radiatus (=Pyrrocoma radiatus)*	x			x				x	
Haplopappus whitney ssp. *discoideus*									x
Helodium blandow				x					
Hieraclium bolanderi									x
Hymenoxys richardsonii				x					
Hypericum majus				x			x		
Hypogymnia apinnata				x					
Idahoa scapigera							x		
Iliamna longisepala									x
Ipomopsis polycladon				x					
Ivesia rhypara var. *rhypara*	x				x				
Ivesia shockleyi									x
Juncus hallii				x			x		
Juncus kelloggii	x								
Kobresia myosuroides									x
Lathyrus grimesii					x			x	
Lathyrus holochlorus	x								
Lepedium davisii	x			x					
slick-spot peppergrass, *Lepedium papilliferum*				x				x	
Bruneau River prickly phlox, *Leptodactylon glabrum*				x	x				
Hazel's prickly phlox, *Leptodactylon pungens ssp. hazeliae*	x			x			x	x	x

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

	BLM						Forest Service Region		
Species	**OR/WA**	**WY**	**MT**	**ID**	**NV**	**UT**	**R 1**	**R 4**	**R 6**
Lesquerella carinata var. languida			x				x		
Lesquerella humilla							x		
large-fruited bladderpod, *Lesquerella macrocarpa*		x							
Payson bladderpod, *Lesquerella paysonii*		x						x	
Lewisia columbiana var. *columbiana*									x
Limnanthes floccosa var. *bellingeriana*	x								
Limosella acaulis				x					x
Listera borealis									x
Lobaria hallii				x					
Lobaria linita				x					
Lobaria scrobiculata				x					
Lobelia dortmanna	x								
Lobelia kalmii	x								
Loiseleuria procumbens									x
Lomatium cusickii									x
Lomatium erythrocarpum	x								x
Lomatium geveri							x		
Lomatium greenmanii	x								x
Lomatium "pastoralis"									x
Lomatium rollinsii	x								
Lomatium salmoniflorum				x					x
Lomatium suksdorfii	x								x
Lomatium tuberosum	x								
Lomatium watsonii									x
Lomatogonium rotatum				x					
Luina serpentina	x								x
Lupinus biddlei	x								
Lupinus cusickii	x								x
Lupinus sabinii(=sabianus)	x								x
Lupinus sulphureus var. *kincaidii*	x								
Lupinus uncialis				x					
Luzula arcuata									x
Lycopodium complanatum									x
Lycopodium dendroideum							x		x
Lycopodium inundatum							x		x
Lycopodium selago									x
Lycopodium sitchense							x		

Species	BLM OR/WA	WY	MT	ID	NV	UT	Forest Service Region R 1	R 4	R 6
Machaerocarpus californicus				x					
Meconella oregana	x								x
Meesia longiseta				x					
Melica stricta									x
Smooth stickleleaf, *Mentzelia mollis*					x				
Packard's mentzelia, *Mentzelia packardiae*	x				x				
Mertensia belle							x		
bank monkeyflower, *Mimulus clivicola*				x			x	x	x
Mimulus evanescens	x								
Mimulus hymenophyllus	x			x					x
Mimulus jepsonii									x
Mimulus jungermannioides	x								
Mimulus patulus	x								x
Mimulus primuloides							x		
Mimulus pygmaeus	x								x
Mimulus suksdorfii									x
Mimulus tricolor									x
Mimulus washingtonensis var. *washintoniensis*	x								x
Mimulus washingtonensis ampliatus				x					
Montia diffusa									x
Montia howellii	x								
Muhlenbergia glomerata							x		x
Myosurus sessilis (=M.minimus) ssp. *apus* var. *sessiliflor*	x								
Navarretia tagetina	x								x
Nemacladus rigidus				x					
Nicotiana attenuata									x
Nymphaea tetragona									x
St.Anthony evening primrose, *Oenothera psammophila*				x					
dwarf evening primrose, *Oenothera pygmaea*	x								
Ophioglossum pusillium	x								
Ophioglossum vulgatum									x
Orchis rotundifolia							x		
Orobanche pinorum									x
Orogenia fusiformia							x		
rosy owl-clover, *Orthocarpus bracteosus*	x								
Swallen mountain-ricegrass, *Oryzopsis swallenii*		x							
Oxypolis occidentalis									x
Challis crazyweed, *Oxytropis besseyi var. salmonensis*				x				x	
wanapum crazyweed,									

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

	BLM						Forest Service Region		
Species	**OR/WA**	**WY**	**MT**	**ID**	**NV**	**UT**	**R 1**	**R 4**	**R 6**
Oxytropis campestris var. wanapum	x								
Oxytropis podocarpa							x		
Parnassia kotzebuei									x
Pedicularis rainierensis									x
Pediocactus simponsii robustior				x					
Pellaea brachyptera									x
Pellaea breweri									x
Pellaea bridgesii									x
Penstemon barrettiae	x								x
Penstemon glaucinus	x								x
Idaho penstemon, *Penstemon idahoensis*				x		x		x	
Janish's penstemon, *Penstamon janishiae*				x					
Lemhi penstemon, *Penstemon lemhiensis*				x			x	x	
Penstemon peckii	x								x
red-rooted yampah, *Perideridia erythrorhiza*	x								
chelan rockmat, *Petrophytum cinerascens*	x								x
Phacelia franklinii									x
sticky phacelia, *Phacelia lenta*	x								
Phacelia lyalli							x		
small-flower phacelia, *Phacelia minutissima*	x			x	x			x	x
Phlox kelseyi var. kelseyi				x					
Phlox kelseyi var. missoulensis							x		
Phlox multiflora									x
tufted twinpod, *Physaria condensata*		x							
Physaria didymocarpa var. didymorcarpa									x
Salmon twin bladderpod, *Physaria didymocarpa var. lyrata*				x				x	
Dorn's twinpod, *Physaria dornii*		x							
dot lichen, *Physcia semipinnata*				x					
nail lichen, *Pilophorus acicularis*				x					
Pityrogramma trianguleria							x		
Choris' bog-orchid, *Platanthera chorisiana*	x								x
Platanthera obtusata									x
Platanthera sparsiflora									x
Pleuropogon oregonus	x								x
Poa abbreviata marshii								x	
Poa grayana									x
Poa laxiflora	x								x

Species	BLM OR/WA	WY	MT	ID	NV	UT	Forest Service Region R 1	R 4	R 6
Polemonium carneum	x								x
Polemonium pectinatum	x								
Polemonium viscosum									x
Polygonum douglasii spp. *auetines*							x		
Polypodium glyoyrrhiza							x		
Polystichum braunii							x		
Potamogeton obtusifolius							x		
Cottam cinquefoil, *Potentilla cottamii*					x	x		x	
Potentilla diversifolia var. *perdissecta*									x
Potentilla nivea									x
Potentilla quinquefolia									x
Potentilla villosa var. *parviflora*									x
Primula alcalina				x					
Primula cusickiana									x
Psathyrotes annua				x					
Pseudocyphellaria anthraspis				x					
Psilocarphus tenellus				x					
Ranunculus longirostris									
Ranunculus lovis							x		
Ranunculus oresterus									x
Ranunculus reconditus	x								x
Rhynchospora alba							x		
Ribes cereum var. *colubrinum*									x
Ribes oxyacanthoides ssp. *cognatum*									x
Ribes oxyacanthoides ssp. *irriguum*									x
Ribes wolfii				x			x		
Romanzofflia elchensis							x		
Columbia cress, *Rorippa columbiae*	x								x
Rubus acaulis									x
Bartons' blackberry, *Rubus bartonianus*	x						x	x	x
Rubus nigerrimus	x								
Rubus pubescens							x		
Rubus spectabilis							x		
Salicornia rubra				x					
Salix barrattiana							x		
Salix candida				x					x
Salix farriae									x
Salix maccalliana									x
Salix pedicellaris							x		
Salix pseudomonticola				x					
Salix tweedyi									x

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

	BLM						Forest Service Region		
Species	**OR/WA**	**WY**	**MT**	**ID**	**NV**	**UT**	**R 1**	**R 4**	**R 6**
Salix vestita var. *erecta*									x
Salix wolfii var. *wolfii*							x		
Sanicula graveolens				x					
Sanicula marilandica							x		x
Saussurea densa							x		
Saussurea weberi							x		
Saxifraga adscendens var. oregonensis									x
Tobias' saxifrage, *Saxifraga bryophora var. tobiasiae*								x	
Saxifraga cernua									x
Saxifraga debilis									x
Saxifraga temperativa							x		
Tolmie's saxifrage, *Saxifraga tolmie var. ledifolia*								x	
Scheuchzeria palustris							x		
Scheuchzeria palustris var. *americana*									x
Scirpus cyperinus									x
Scirpus hudsonianus							x		
Scirpus subterminallis				x			x		
Scribneria bolanderi									x
Scutellaria nana nana				x					
Sedum lanceolatum var. *rugicolum*							x		
Senecio dimorphophyllus									x
Senecio ertterae	x								
Senecio porteri									x
Silene nuda ssp. *insectivora*									x
Silene seelyi	x								x
Silene spaldingii	x			x					x
Sisyrinchium sarmentosum	x								x
Sisyrinchium septenrionale									x
Sphaeromeria potentilloides				x					
Sphaerophorus globosus				x					
Spiraea densiflora var. *splendens*									x
Spiranthes romanzoflana var. *porrifolia*									x
Sorobolus asper				x					
Stanleya confertiflora				x					
Stipa viridula				x					
Streptopus streptopoides									x

Species	BLM						Forest Service Region		
	OR/WA	WY	MT	ID	NV	UT	R 1	R 4	R 6
Streptopus streptopoides var. *brevipes*							x		
Stylocline filaginea				x					
Stylocline psilocarphoides									x
Suksdorfia violacea									x
Sullivantia oregana	x								x
Synthyris platycarpa							x		
Tauschia hooveri	x								
Tauschia stricklandii									x
Taucrium canadense ssp. *viscidum*									x
Tellima grandiflora							x		
Teucrium anadense occidentale				x					
Texosporium sancti-jacobi	x			x					
Thalictrum alpinum							x		
Thalictrum alpinum var. *hebetum*									x
Thalictrum dasycarpum									x
worm lichen, *Thamnolia vermicularis*				x					
Thelypodium brachycarpum									x
Thelypodium eucosmum	x								x
Thelypodium howellii ssp. *howellii*									x
purple thick-leaved thelopody, *Thelypodium laciniatrum streptanthoides*				x					
wavy-leaf thelypody, *Thelypodium repandum*				x				x	
Thelypteria nevadensis							x		
Thelypteria phegopteris							x		
Stanley thlaspi, *Thlaspi aileeniae*								x	
Thlaspi parviflorum							x		
Tillaecea aquatica									x
out-of-tune sticky tofieldia, *Tofieldia glutinosa var. absona*								x	
Townsendia montana									x
Townsendia parryi									x
Townsendia scapigera				x					
Triantella arctica							x		
Triantella latifolia							x		
Trifolium eriocephalum							x		
Trifolium gymnocarpon							x		
Trifolium leibergii	x			x				x	
Trifolium owyheense	x			x					
Trifolium plumosum amplifolium				x					
Trifolium thompsonii	x								x
Trollius laxus var. *albiflorus*									x

Table E-2. Sensitive Vertebrate and Plant Species: BLM and Forest Service Regions in the ICBEMP Project Area*

	BLM						Forest Service Region		
Species	**OR/WA**	**WY**	**MT**	**ID**	**NV**	**UT**	**R 1**	**R 4**	**R 6**
Ulota megalospora				x					
Utricularia minor									x
Vaccinium myrtilloides									x
Vaccinium oxycoccos							x		
Veratrum californicum							x		
Viola renifolia							x		
Idaho range lichen, *Xanthoparmelia idahoensis*								x	
Idaho strawberry, *Waldsteinia idahoensis*				x			x		
Wolffia columbiana									x
Idaho range lichen, *Xanthoparmelia idahoensis*				x					

* Excluding federally listed threatened, endangered, proposed, or candidate species.

SOURCES:

BLM State Lists:

Idaho - Mallet, J. and Hahn, M.G. 1996. Sensitive Species Supplement to the Master Memorandum of Understanding Between the Idaho Department of Fish and Game and the Bureau of Land Management, signed by Director, Idaho Fish and Game and Idaho State Director, BLM; attachments: Sensitive Species List-Animals, Sensitive Species List-Plants. List covers only those BLM districts that lie wholly or in part within the ICBEMP project area.

Montana - (1) US Fish & Wildlife Service. 1996. Memorandum to Deputy State Director, Division of Resources, Montana State Office, BLM, from Field Supervisor, Montana Field Office, USDI Fish and Wildlife Servic, regarding Section 7 Consultation-Implementation of Standards for Rangeland Health, Appendix F and Appendix G, Helena, Montana, USDI Fish and Wildlife Service, Ecological Services. (2) USDI Bureau of Land Management, Manual 6840 Supplement, Special Status Species Management, April 8, 1996, 31 pp. (3) D. McCleerey, BLM Garnet Resource Area, Butte District, personal communication 3/14/97. List covers only those BLM districts that lie wholly or in part within the ICBEMP project area.

Nevada - Morgan, A.J. 1996. (1) Instruction Memorandum No. NV-96-019, from State Director, Nevada, to District Managers, Nevada, regarding Nevada Sensitive Species List, dated March 20, 1996, Reno, NV: USDI BLM Nevada State Office; attachments: (a) List of Sensitive Wildlife Species Agreed by Nevada Department of Fish and Game and the Nevada State Office of BLM, signed 4/78; (b) USDI Fish and WildlifeService, Nevada State Office, Candidate and Proposed Species of Nevada, updated February 8, 1995. (2) Nevada Natural Heritage Program, Sensitive Plant Occurrences within the Columbia Basin, unpublished data, 3/18/97. (3) District Biologists, BLM Elko and Winnemucca Districts, personal communcation, 3/17/97. List covers only those BLM districts that lie wholly or in part within the ICBEMP project area.

Oregon/Washington - (1) BLM Oregon/Washington Special Status Species Database. 1997. (2) B.Hill, BLM State Office Special Status Species Biologist, personal communication, 3/17/97. List covers only those BLM districts that lie wholly or in part within the ICBEMP project area.

Utah - Lamb, G.W. 1996. (1) Instruction Memorandum No. UT96-69, from State Director to AFOs, regarding Interim Utah Bureau of Land Management Sensitive List Policy, dated August 28, 1996, Salt Lake City, UT: Utah State Office, USDI, BLM; attachments: (a) Utah Division of Wildlife Resources, Native Utah Wildlife Species of Special Concern (6 pp); (b) Modified Interagency Rare Plant Working Group Plant List (4 pp). (2) J. Brown, BLM Salt Lake District, personal communication, 3/17/97. List covers only those BLM districts that lie wholly or in part within the ICBEMP project area.

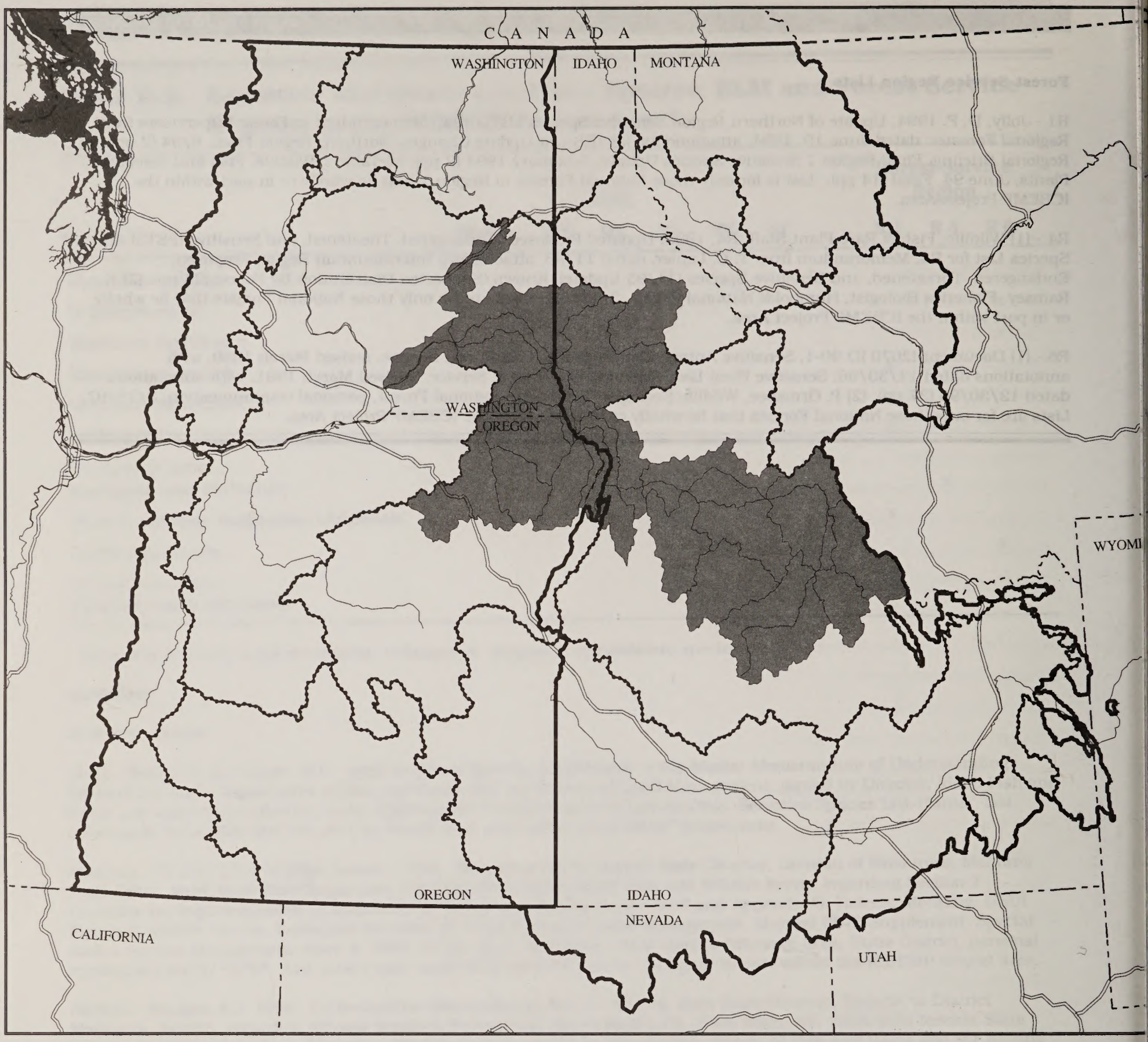
Wyoming - (1) Fertig, W. 1996. Wyoming Plant Species of Special Concern, 1996 edition, Laramie, WY: Wyoming Natural Diversity Database; (2) Wyoming Game and Fish Department, Nongame Bird andMammal Plan. (3) J. Dunder, BLM Green River Resource Area, Rock Springs District, personal communication, 3/17/97. (4) D. Roberts, BLM State Office, personal communication, 3/17/97. List covers only those BLM districts that lie wholly or in part within the ICBEMP project area.

Forest Service Region Lists:

R1 - Jolly, D. F. 1994. Update of Northern Region Sensitive Species List (1994), Memorandum to Forest Supervisors from Regional Forester, dated June 10, 1994; attachments: (a) TES List Update Changes, Northern Region Final, 6/94 (2 pp); (b) Regional Briefing, Final Region 1 Sensitive Species Update, Summary 1994 (2 pp); (c) Table 1-Wildlife, Fish and Sensitive Plants, June 94, Final (14 pp). List is for only those National Forests in Region 1 that lie wholly or in part within the ICBEMP Project Area.

R4 - (1) Wildlife, Fish & Rare Plant Staff, R4, 1995. Updated Proposed, Endangered, Theatened, and Sensitive (PETS) Species List for R4, Memorandum from T. C. Lanier, dated 11/95; attachment: Intermountain Region Proposed, Endangered, Threatened, and Sensitive Species (11/95 Update), Known/Suspected Distribution By Forest (23 pp). (2) K. Ramsey, Fisheries Biologist, Humboldt National Forest, 3/17/97. Lists are for only those National Forests that lie wholly or in part within the ICBEMP Project Area.

R6 - (1) Document !2670 ID 90-1, Sensitive Animal List, Region 6, U.S. Forest Service, revised March 1989, with annotations dated 12/30/96; Sensitive Plant List, Region 6, U.S. Forest Service, Revised March 1991, with annotations dated 12/30/96 (37 pp). (2) P. Ormsbee, Wildlife Ecologist, Willamette National Forest, personal communication, 3/18/97. Lists are for only those National Forests that lie wholly or in part within the ICBEMP Project Area.



Critical Habitat for Snake River Spring, Summer, and Fall Chinook Salmon and Snake River Sockeye Salmon**

50 0 50 100 150 miles

50 0 50 100 150 km

N

Critical Habitat

Major Streams

Major Roads

EIS Area Border

ERU Boundaries

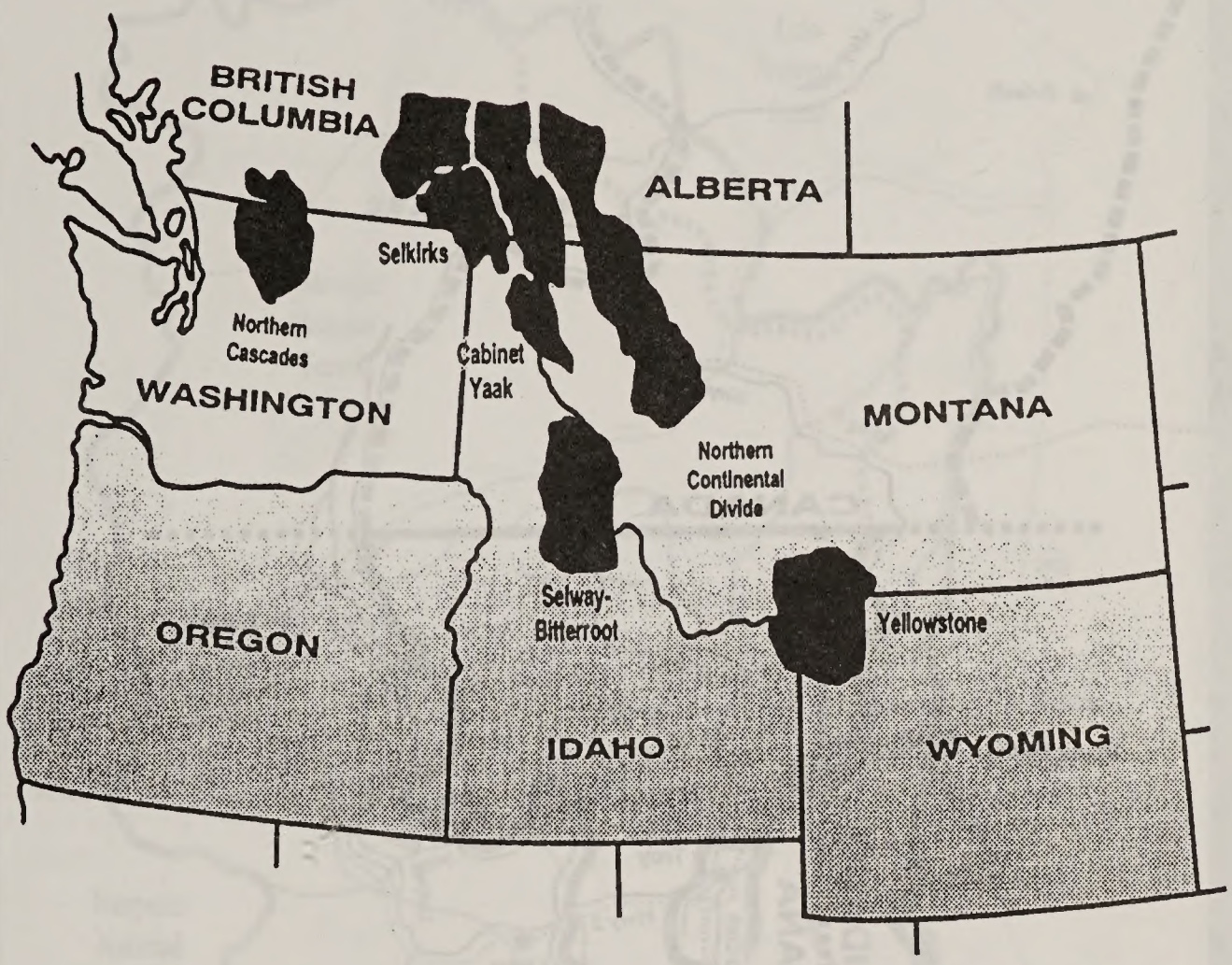
INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

**Ecological reporting unit names and numbers are found on Map 1-1.*

***4th field hydrologic unit codes containing critical habitat for listed Snake River salmon species (Federal Register Vol. 58, No. 247, Dec. 28, 1993).*

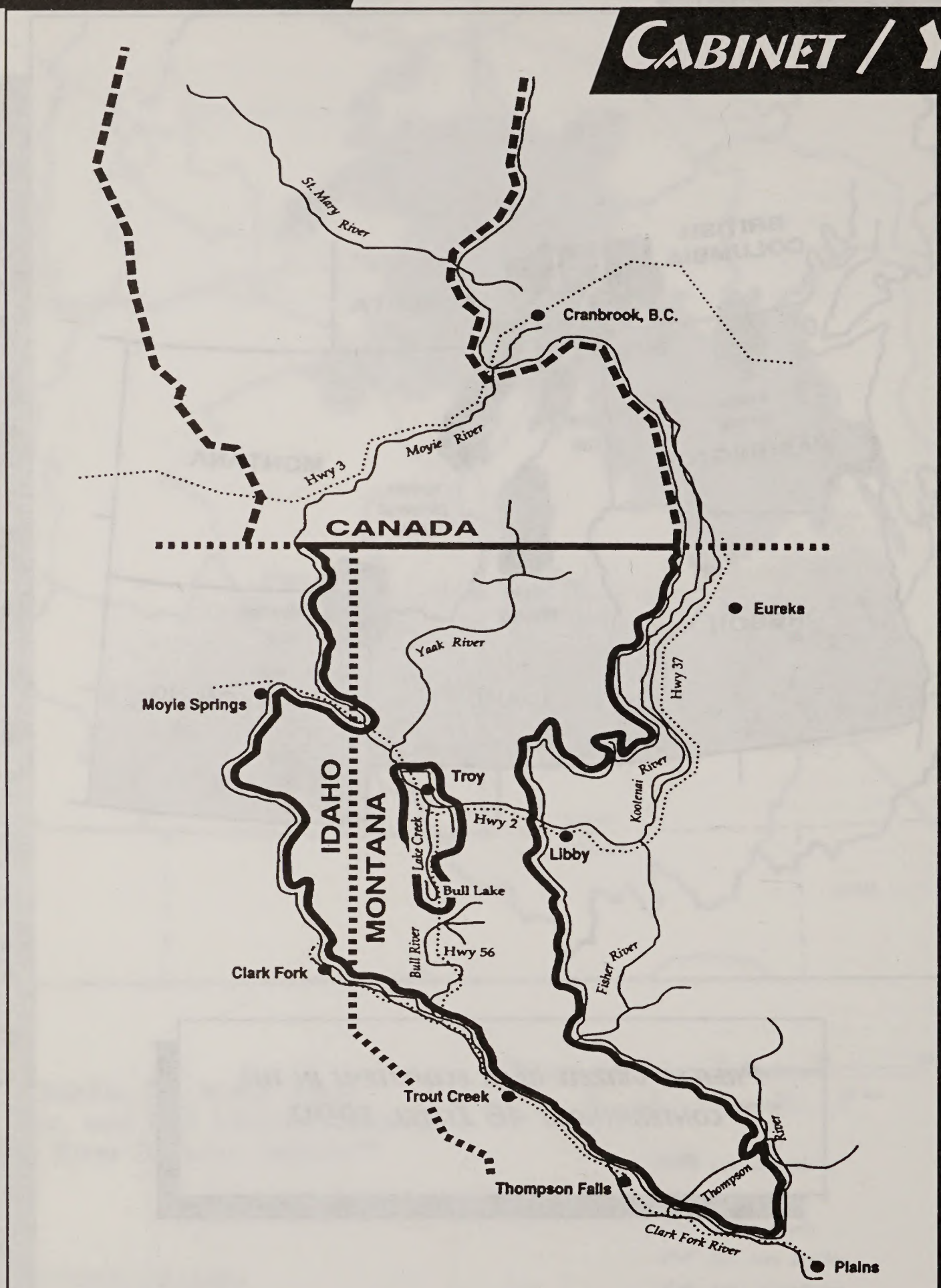
GRIZZLY BEAR RECOVERY ZONES



PRESENT GRIZZLY BEAR ECOSYSTEMS IN THE CONTERMINOUS 48 STATES, 1990.

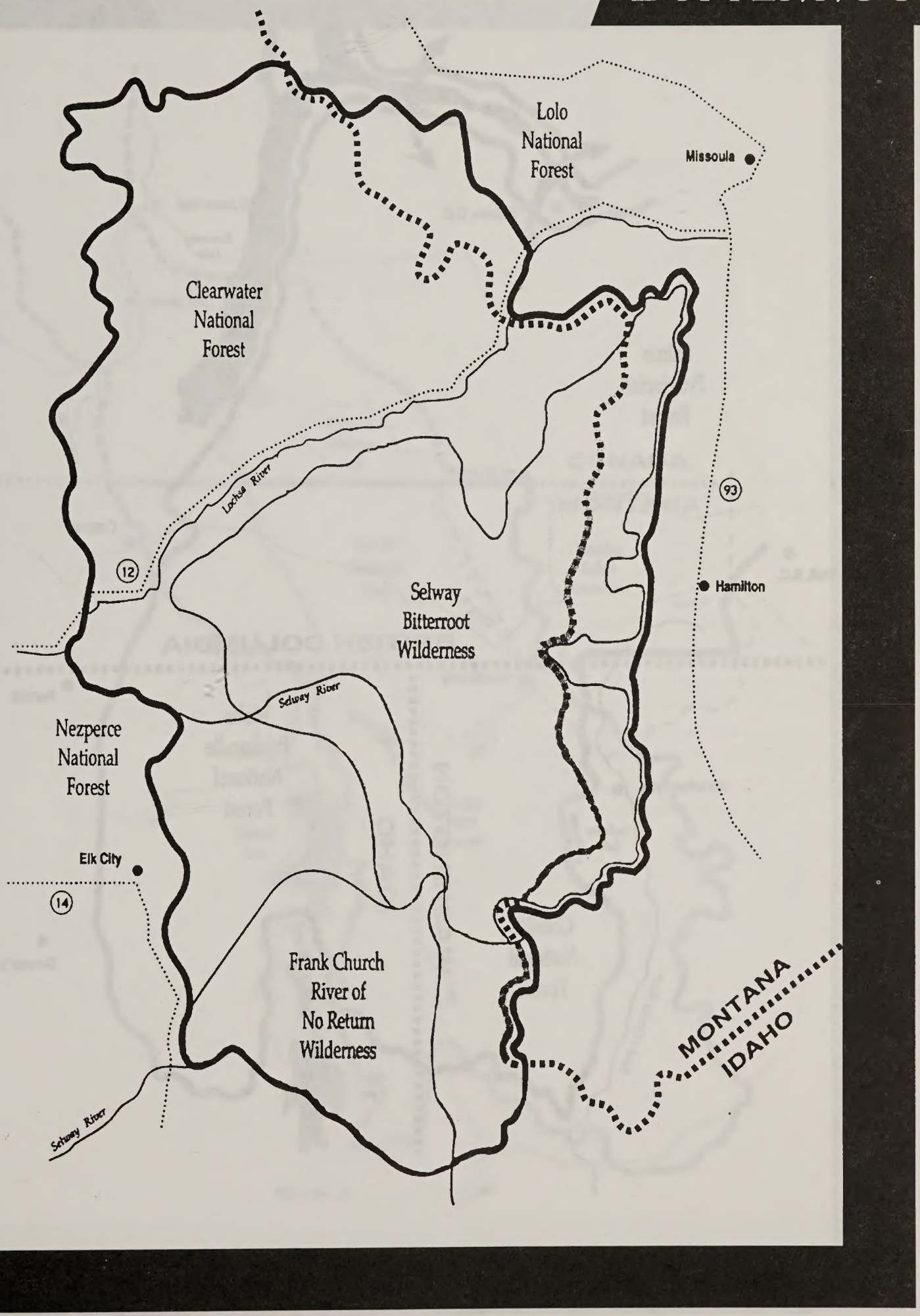
GRIZZLY BEAR RECOVERY ZONE

CABINET / YAAK



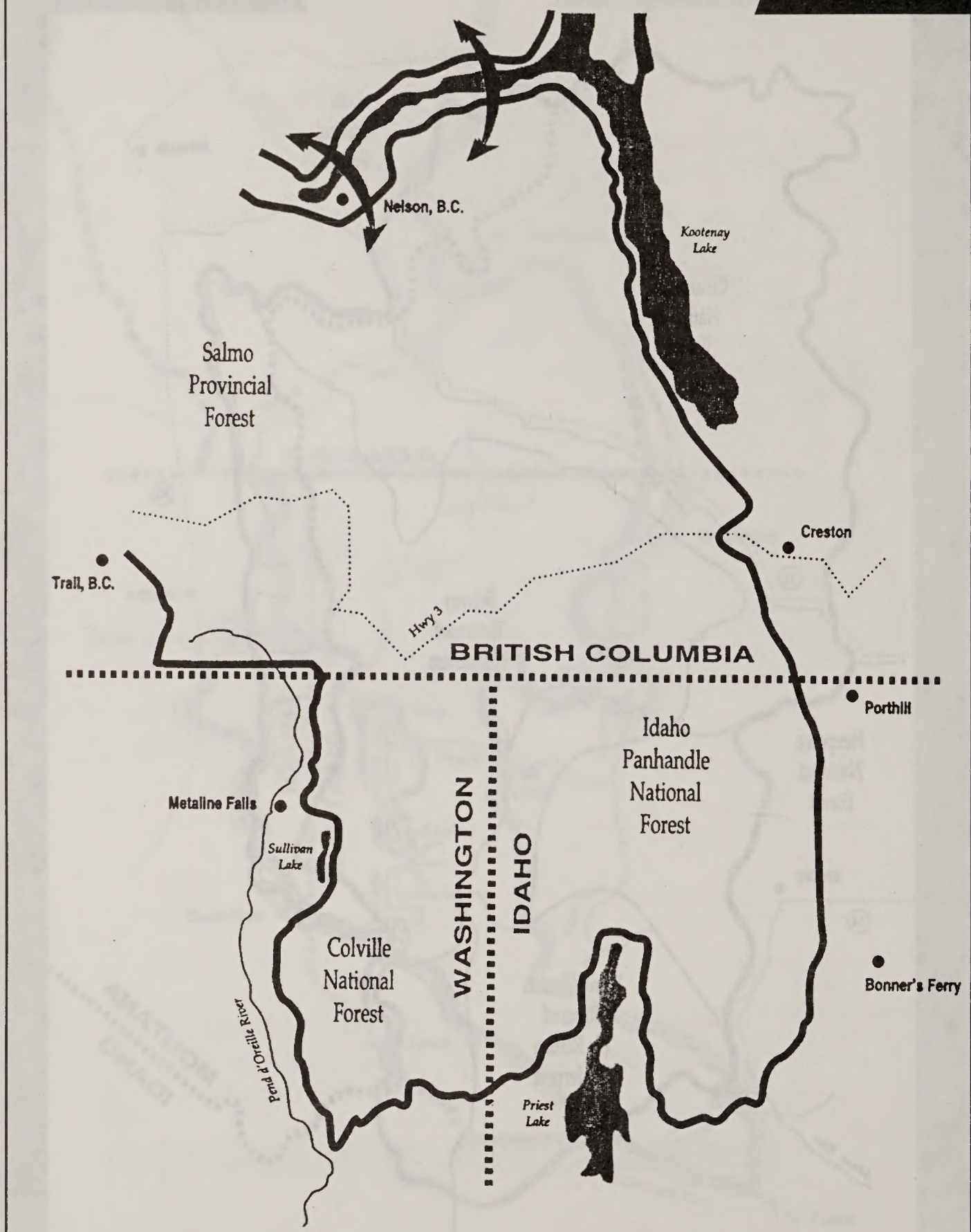
GRIZZLY BEAR RECOVERY ZONE

BITTERROOT



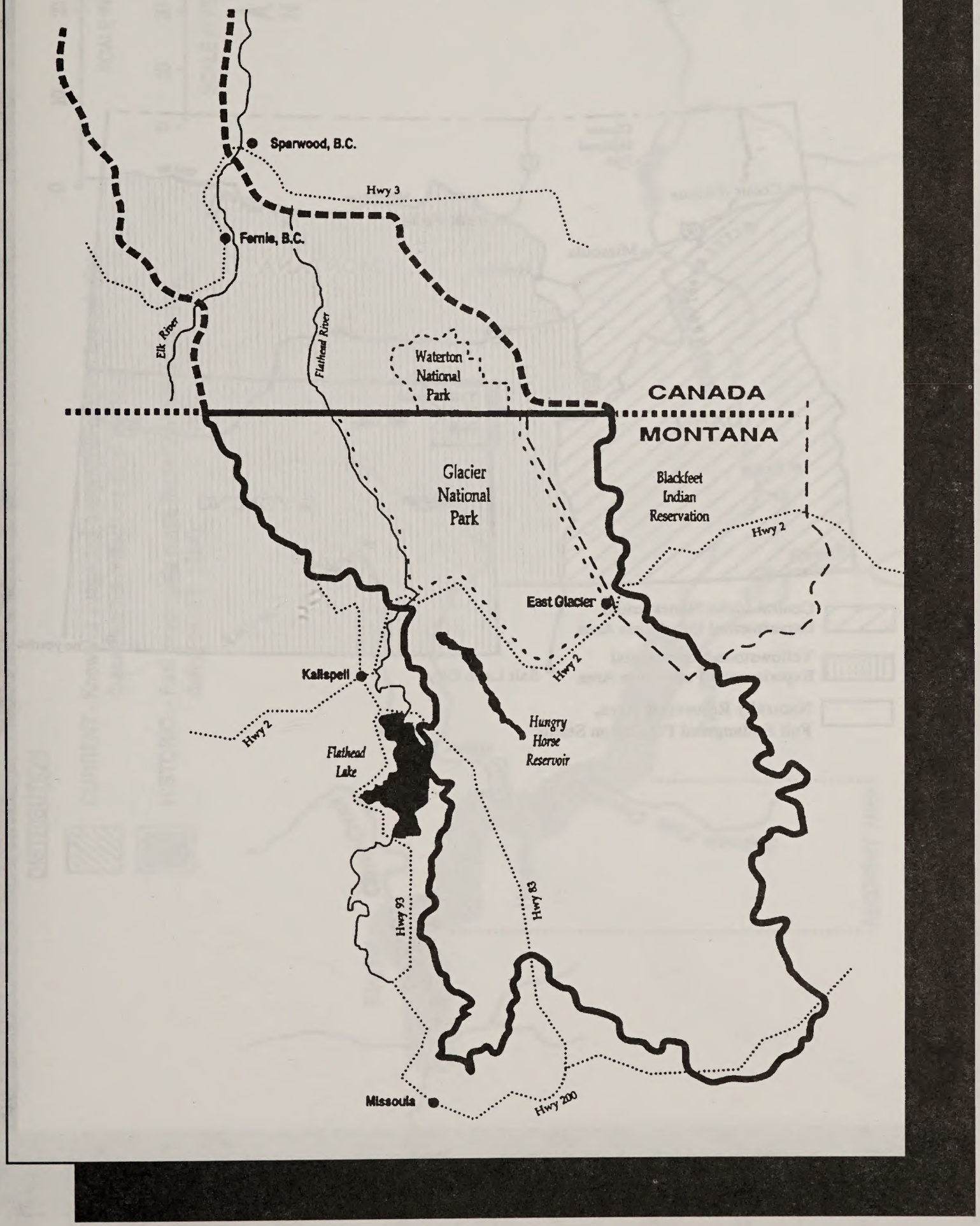
GRIZZLY BEAR RECOVERY ZONE

SELKIRK

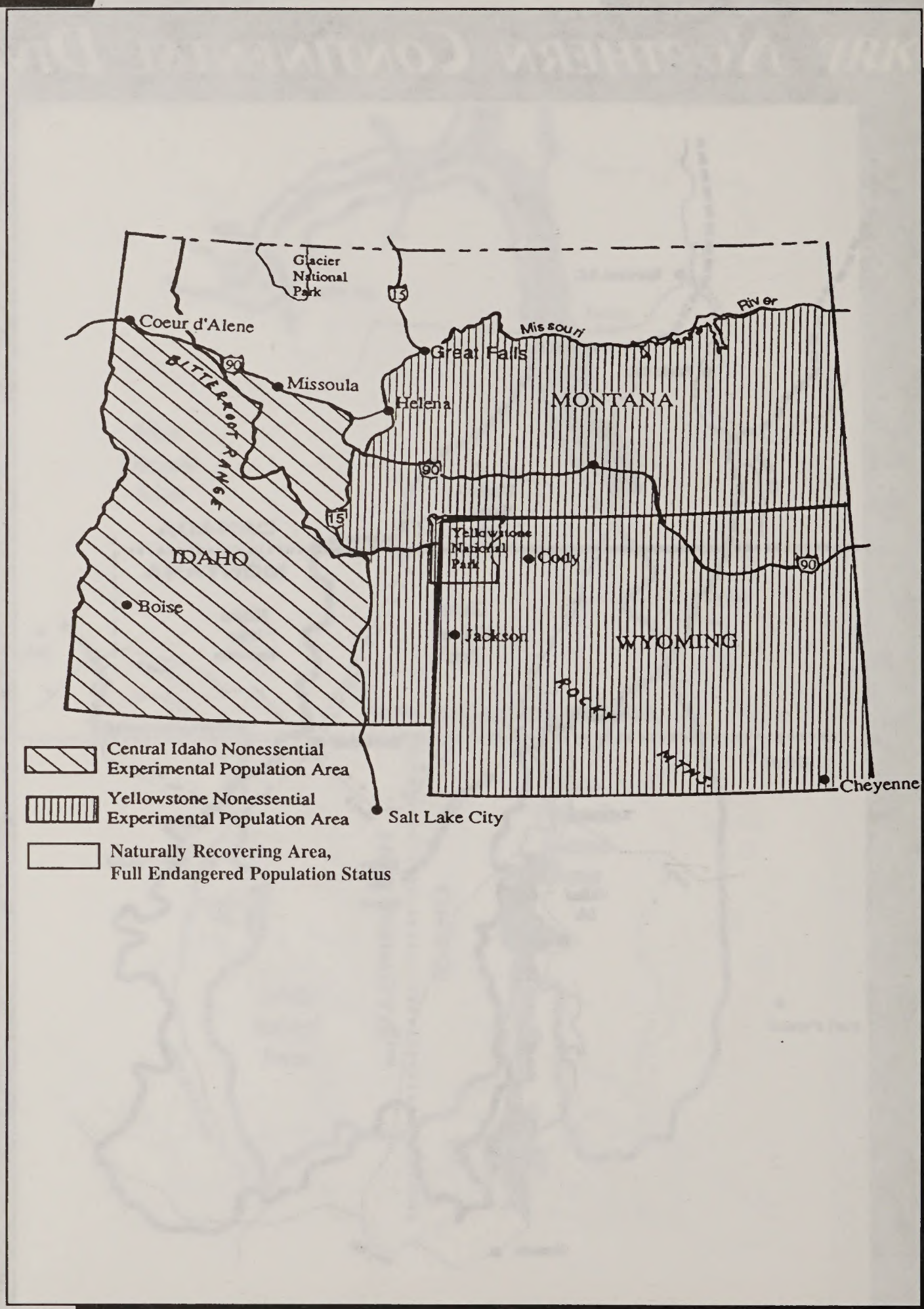


THE HABITAT OF THE WOODLAND CARIBOU IS TOTALLY WITHIN THE SELKIRK GRIZZLY BEAR RECOVERY ZONE

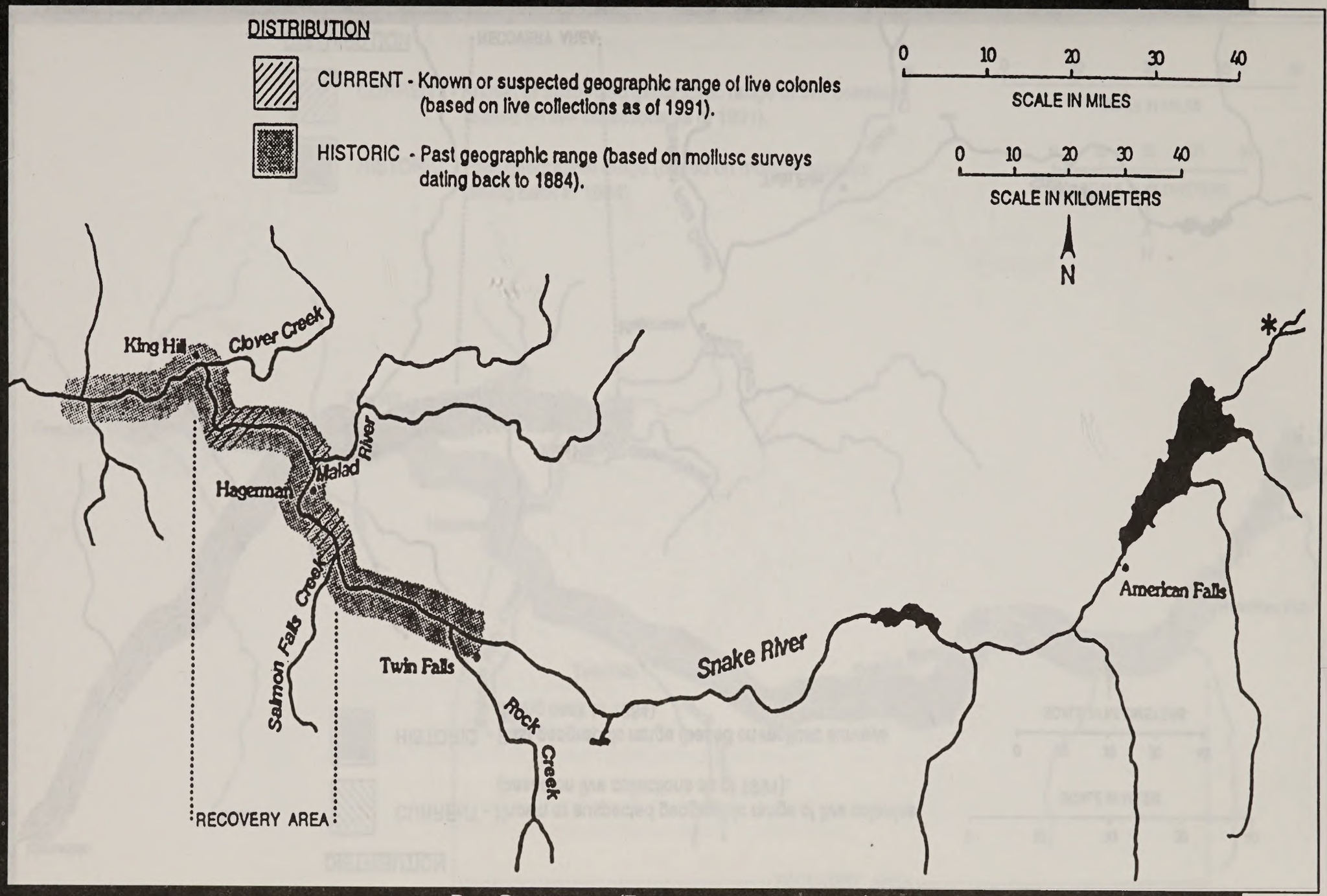
GRIZZLY BEAR RECOVERY ZONE
NORTHERN CONTINENTAL DIVIDE



WOLF RECOVERY AREAS



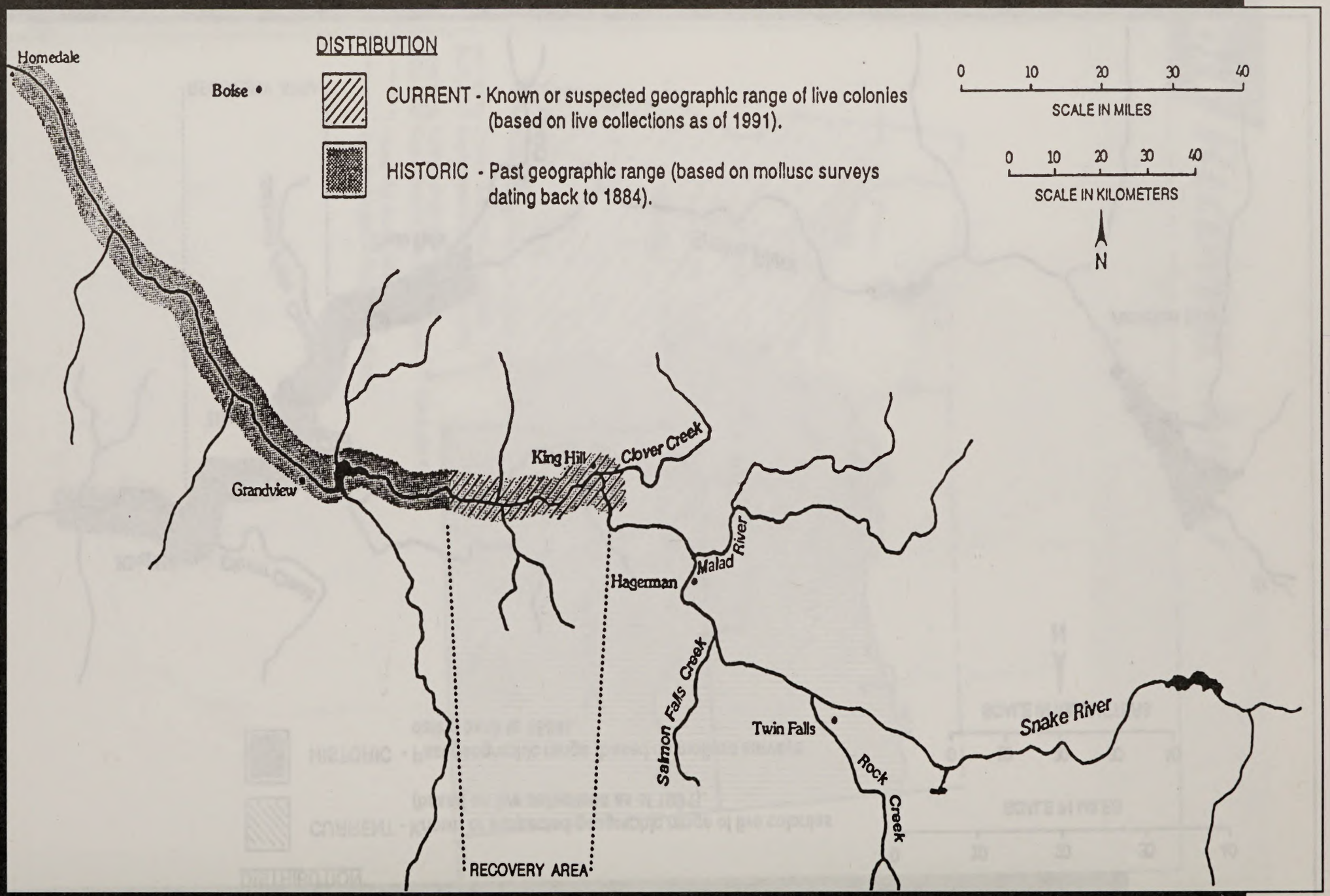
Threatened and Endangered Aquatic Mollusks



Map Citation: U.S. Fish and Wildlife Service. 1995. Snake River Aquatic species Recovery Plan. Snake River Basin Office, Ecological Services, Boise, Idaho. 92 pp.

Bliss Rapids snail (Taylorconcha serpenticola) current and historic distribution and recovery area within the Snake River drainage in Idaho. * Denotes the occurrence of a disjunct population near the confluence with the Blackfoot River.

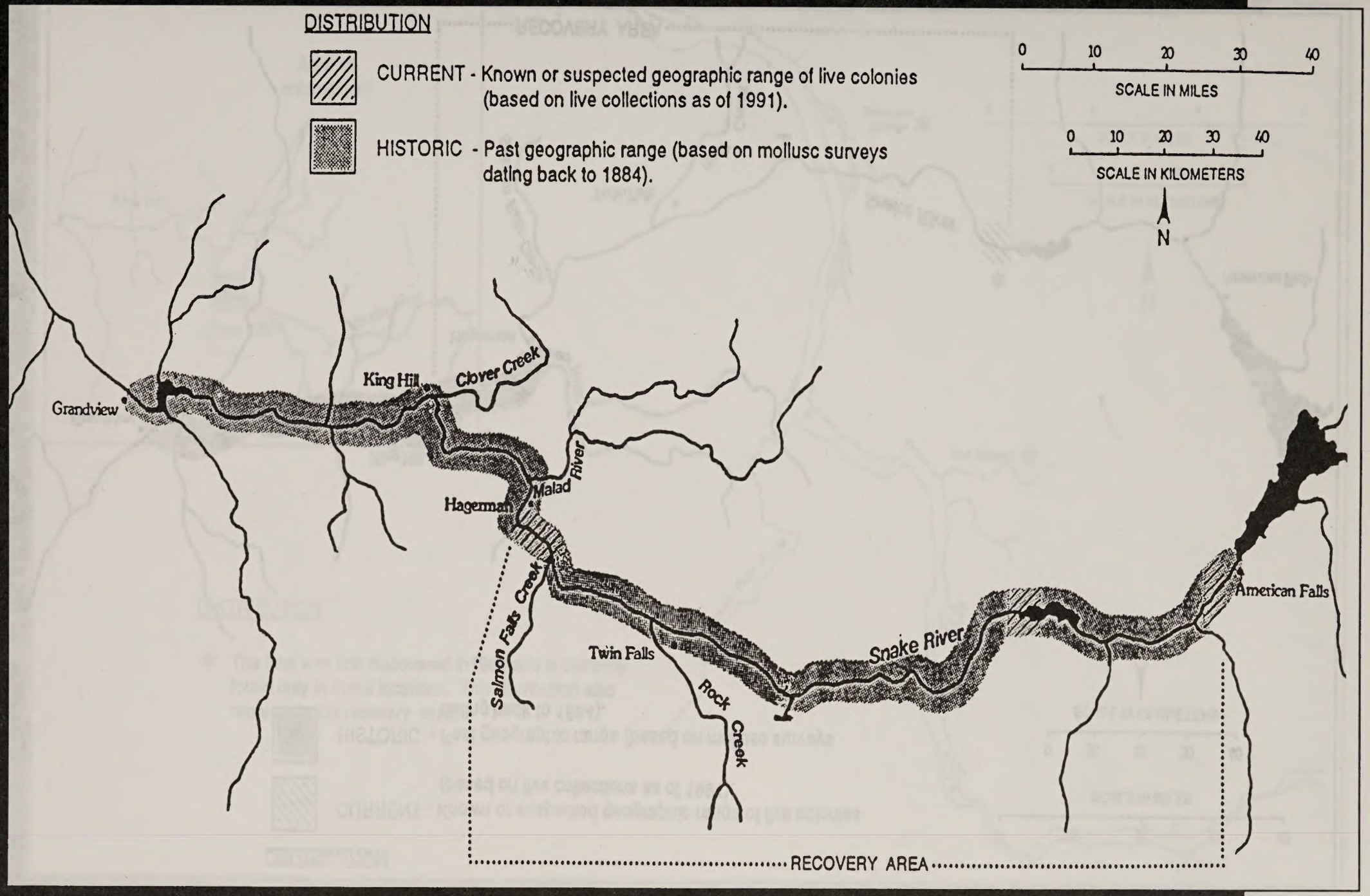
Threatened and Endangered Aquatic Mollusks



Map Citation: U.S. Fish and Wildlife Service. 1995. Snake River Aquatic species Recovery Plan. Snake River Basin Office, Ecological Services, Boise, Idaho. 92 pp.

Idaho springsnail (Pyrgulopsis idahoensis) current and historic distribution and recovery area within the Snake River drainage in Idaho.

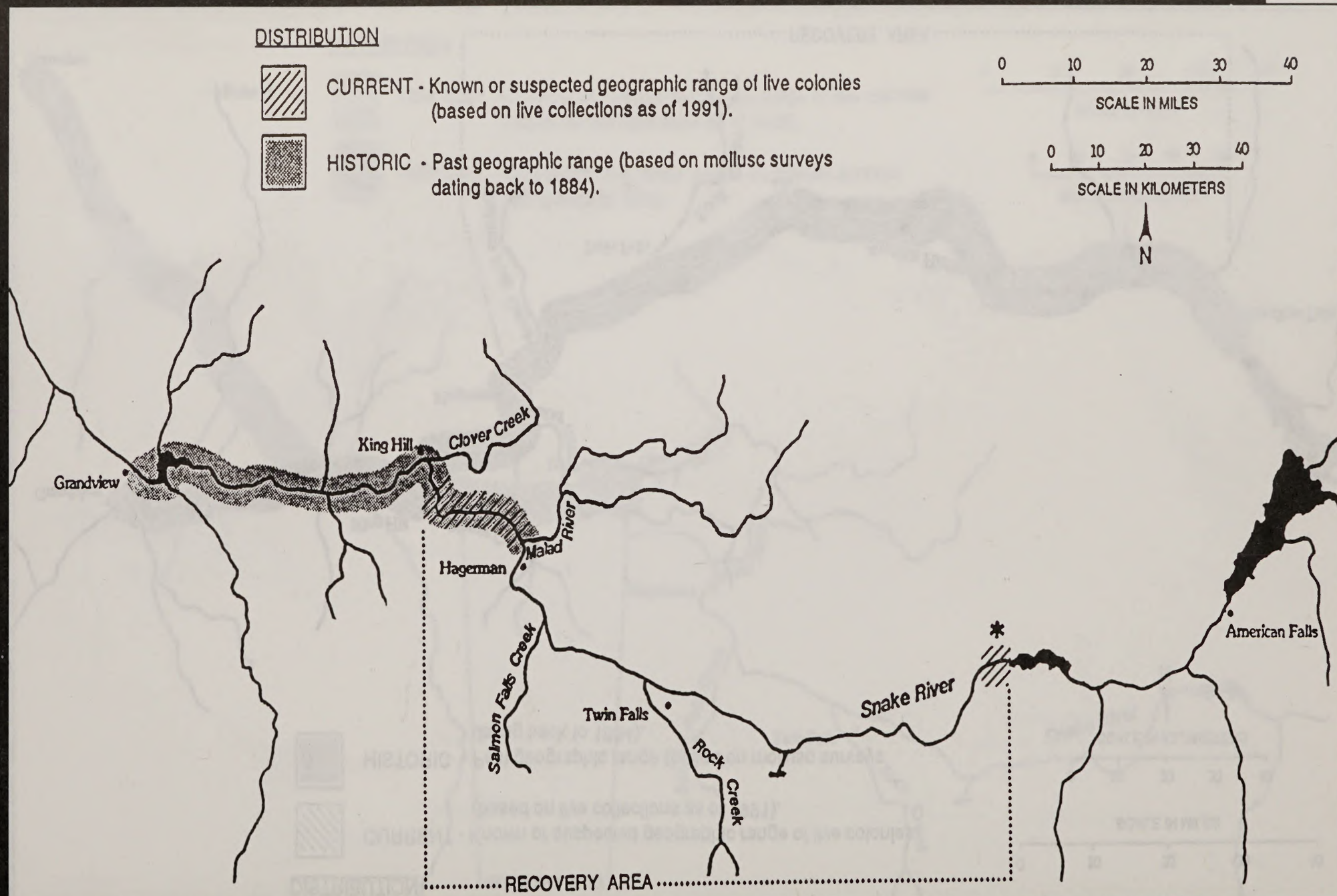
Threatened and Endangered Aquatic Mollusks



Map Citation: U.S. Fish and Wildlife Service. 1995. Snake River Aquatic species Recovery Plan. Snake River Basin Office, Ecological Services, Boise, Idaho. 92 pp.

Utah valvata (Valvata utahensis) current and historic distribution and recovery area within the Snake river drainage in Idaho.

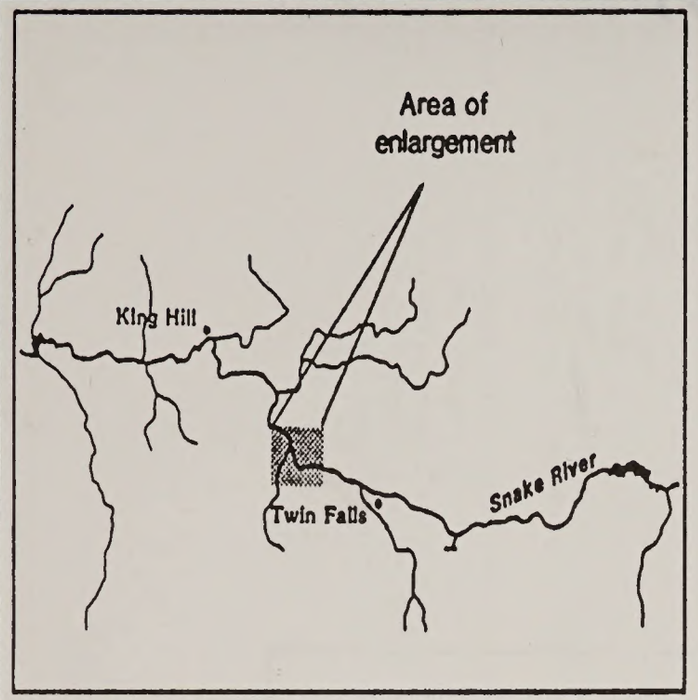
Threatened and Endangered Aquatic Mollusks

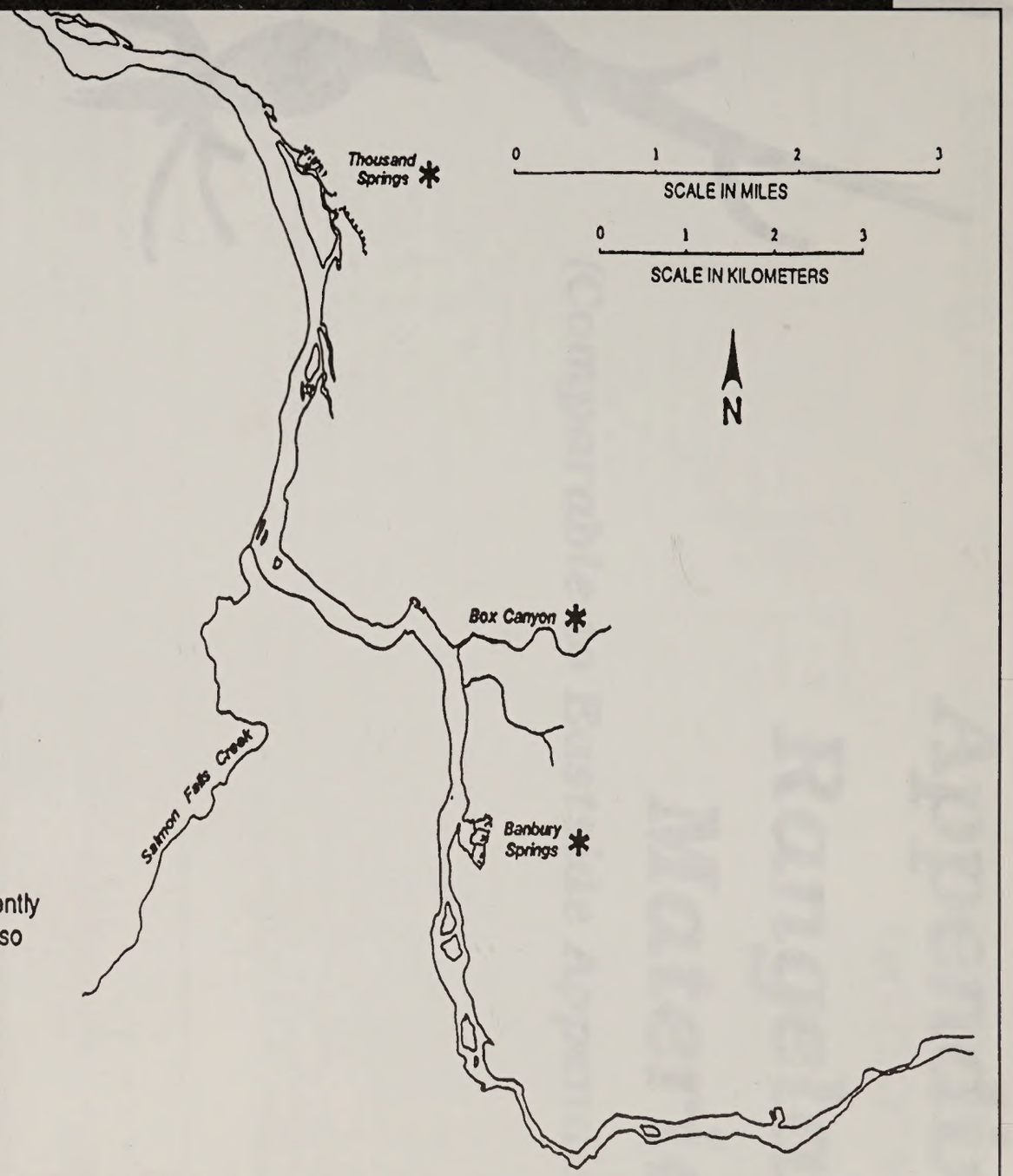


Map Citation: U.S. Fish and Wildlife Service. 1995. Snake River Aquatic species Recovery Plan. Snake River Basin Office, Ecological Services, Boise, Idaho. 92 pp.

Snake River physa (Physa natricina) current and historic distribution and recovery area within the Snake River drainage in Idaho.
*Recorded live below Minidoka Dam in 1987.

Threatened and Endangered Aquatic Mollusks



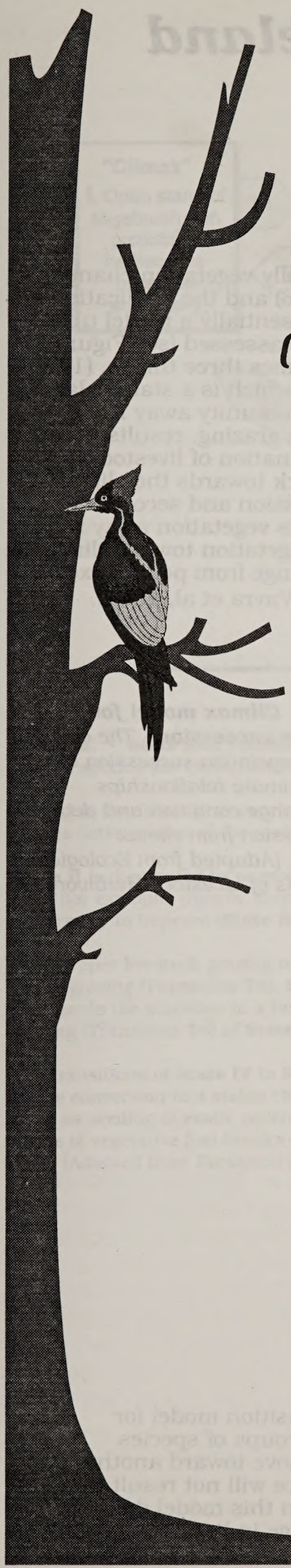


DISTRIBUTION

* The lanx was first discovered in1988 and is currently found only in these locations. This distribution also represents the recovery area.

Map Citation: U.S. Fish and Wildlife Service. 1995. Snake River Aquatic species Recovery Plan. Snake River Basin Office, Ecological Services, Boise, Idaho. 92 pp.

Banbury Springs lanx (Lanx sp.) current distribution and recovery area within the Snake River drainage in Idaho.



Appendix F Rangeland Materials

(Comparable to Eastside Appendix 2-2)

This Appendix contains the following items:

- *Succession Models for Rangeland Vegetation*
  - *Climax Model*
  - *State and Transition Model*
- *NoxiousWeed Management*

Succession Models for Rangeland Vegetation

Climax Model

The "climax" model of rangeland vegetation succession ~ which is essentially vegetation change ~ uses concepts of climax and plant succession proposed by Clements (1916) and the application of these concepts to rangelands by Sampson (1919). The climax model is essentially a model upon which range condition, labeled typically as excellent, good, fair, or poor, is assessed (see Figure 1: Climax model for vegetation succession). As used, the climax model assumes three things. (1) A vegetation type has only one stable state. This stable state is the climax, which is a stable plant community that is determined by climate. (2) Any change in the plant community away from climax, which is referred to as retrogression, caused by improper livestock grazing, results in an unstable state which can be reversed by reduction, manipulation, or elimination of livestock grazing. This reversal represents a movement of the plant community back towards the climax community, which is referred to as secondary succession. Thus, retrogression and secondary succession are opposite pathways of vegetation change; retrogression leads vegetation away from climax and thus into poorer condition, and secondary succession leads vegetation toward climax or excellent condition. (3) For a given plant community, its condition can change from poor to excellent or from excellent to poor. The change is continuous, along a continuum (Vavra et al. 1994).

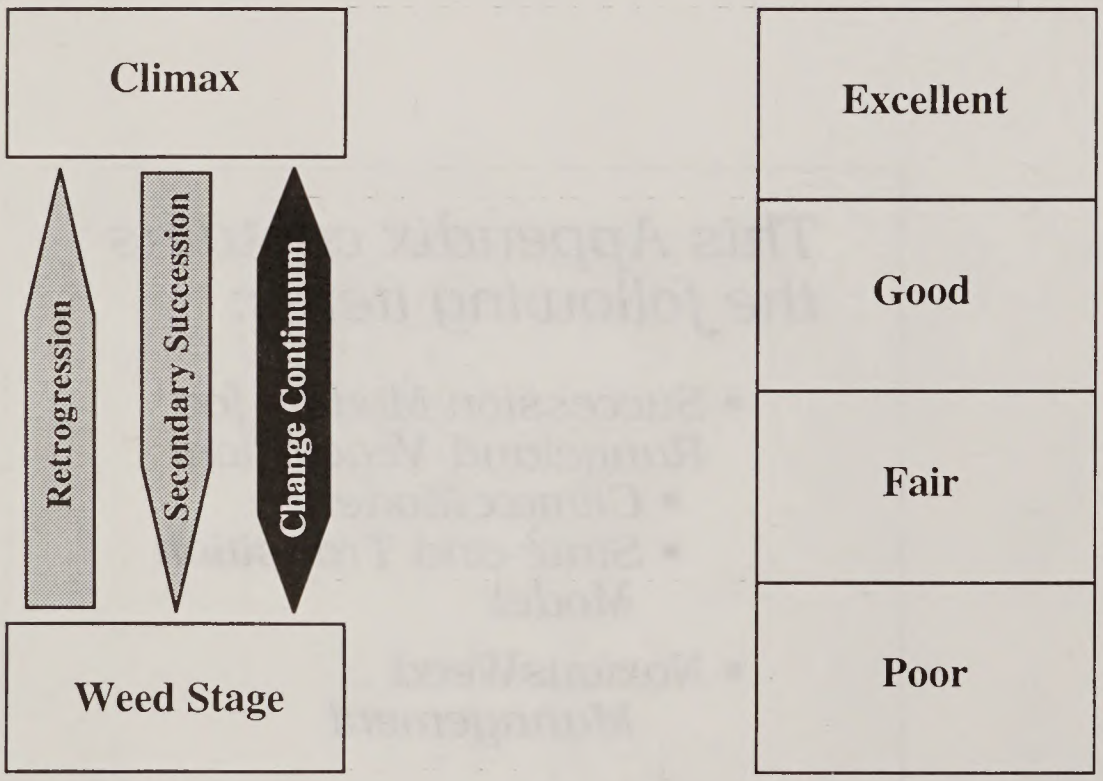


Figure 1. Climax model for vegetation succession *- The climax model of vegetation succession and the approximate relationships between range condition and degree of retrogression from climax conditions. (Adapted from Ecological Implications of Livestock Herbivory in the West.)*

State and Transition Model

According to the "state and transition" model (see Figure 2: State and transition model for sagebrush grass ecosystems), "states" are recognizable, relatively stable groups of species occupying a site. Forces that cause vegetation to cross a threshold and move toward another state are known as transitions. Once a threshold is crossed, removal of the force will not result in reversal, that is, secondary succession back to climax. Thus, vegetation in this model does not necessarily succeed or retrogress continuously, in a linear way, with change in livestock grazing pressure, as the climax model asserts (adapted from Vavra et al. 1994).

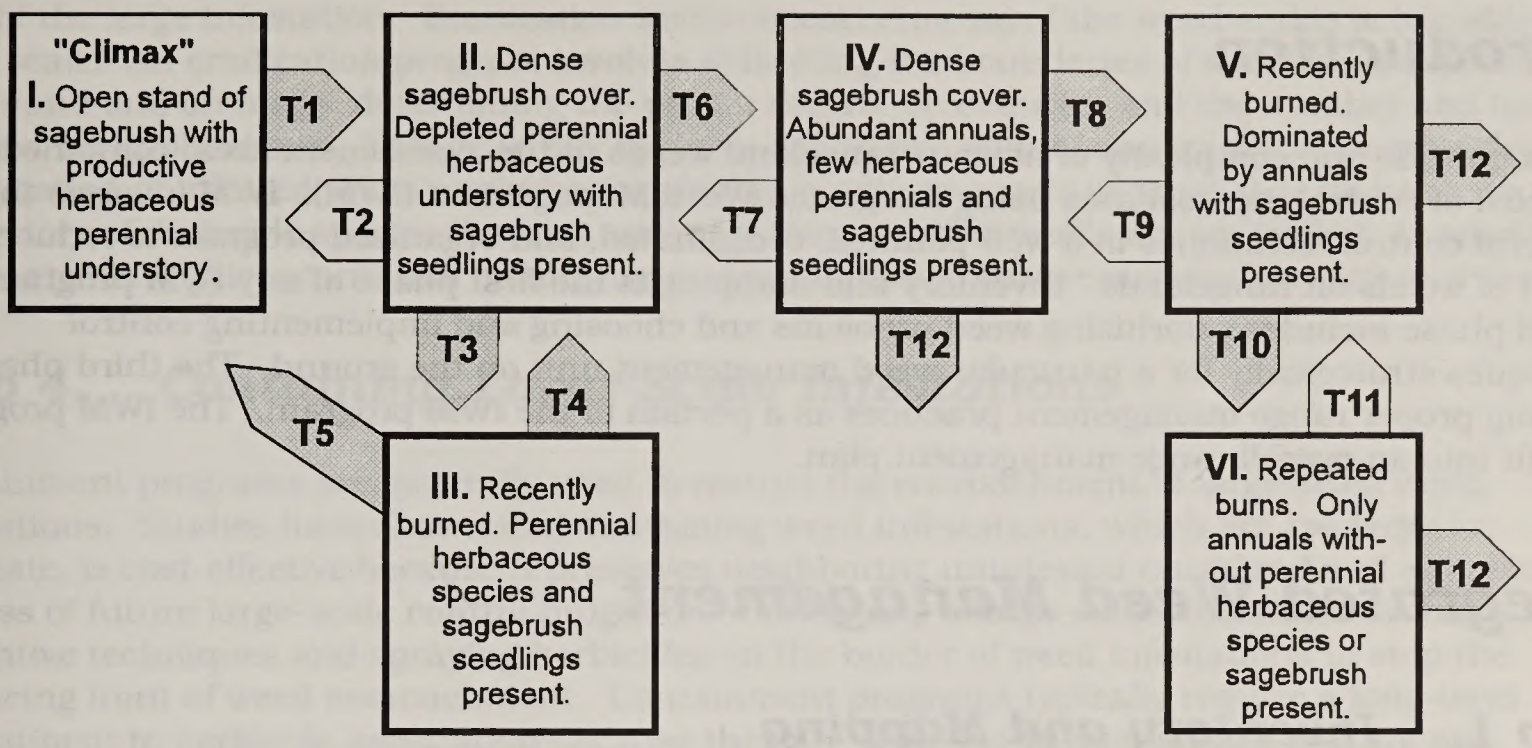


Figure 2. - State and Transition Model for Sagebrush Grass Ecosystem. States I, II, and **III** exist in areas without annual species (for example, cheatgrass or medusahead).

State I is the "climax" or condition undisturbed by livestock grazing. Transition arrow **T1** represents heavy grazing which causes deterioration of the understory and increased density and vigor of sagebrush.

State II is dominated by sagebrush and will remain stable for long periods of time. Transition **T3** is fire or some other force (for example, insects, disease, or an herbivore that eats sagebrush) that reduces the sagebrush, which permits the understory to improve (**State III**).

With proper livestock grazing management (Transition **T5**), **State III** can move back to a state resembling **State I**. With heavy grazing (Transition **T4**), **State III** will move to **State II**, and sagebrush will again dominate the stand. **State IV** represents the situation in a heavily grazed area where a well-adapted annual like cheatgrass exists. Continuous heavily grazing (Transition **T6**) of **State II** results in **State IV**, and perennials in the understory have been replaced by annuals.

The transitions of **State IV** to **State V** (Transition **T8**), and **State V** to **State VI** (Transition **T10**), represents the role of fires in the conversion to a stable cheatgrass-dominated plant community. Transition **T12** represents intervention by humans, such as seeding of exotic perennial grasses, like crested wheatgrass. The Bureau of Land Management, for example, plants strips of vegetative fuel breaks consisting of crested wheatgrass, other grasses, forbs and shrubs to slow the spread of fires. (Adapted from *Ecological Implications of Livestock Herbivory in the West*).

Noxious Weed Management

Introduction

The magnitude and complexity of noxious rangeland weeds in the assessment area, combined with their cost of control, necessitates using Integrated Weed Management (IWM). IWM involves the use of several control techniques in a well-planned, coordinated, and organized program to reduce the impact of weeds on rangelands. Inventory and mapping is the first phase of any IWM program. The second phase includes prioritizing weed problems and choosing and implementing control techniques strategically for a particular weed management unit on the ground. The third phase is adopting proper range management practices as a portion of the IWM program. The IWM program must fit into an overall range management plan.

Integrated Weed Management

Step 1. Inventory and Mapping

The goal of inventory and mapping is to determine and record the weed species present, the area infested, the density of the infestation, the rangeland under threat of invasion, the soils and range vegetation types, and other site factors pertinent to successfully managing infested rangeland and rangeland susceptible to invasion. Inventories and mapping can be conducted by field surveys, aerial photography, and geographic information systems.

Planning and Implementation

Planning is the process by which weed problems and solutions are identified and prioritized. In addition, an economic plan of action is developed to provide direction for implementing the IWM program. Implementing control techniques includes (1) preventing encroachment into uninfested rangeland, (2) detecting and eradicating new introductions, (3) containing large-scale infestations,(4) controlling large-scale infestations using an integrated approach, and often (5) revegetation. The key component of any successful weed management program is sustained effort, constant evaluation, and the adoption of improved strategies.

Step 2. Preventing Weed Encroachment

Preventing the introduction of rangeland weeds is the most practical and cost-effective method for their management. Prevention programs include such techniques as limiting weed seed dispersal, minimizing soil disturbance, and properly managing desirable vegetation. New weed introductions can be minimized by (1) using weed seed free hay, feed grain, straw, or mulch, (2) refraining from driving vehicles and machinery through weed infestations and, before driving from a weed infested area to an uninfested area, washing the undercarriage of vehicles and machinery, (3) permitting livestock to graze weed infested areas only when weeds are not flowering or producing seeds, or, if livestock are grazing weed infested areas, moving them to a holding area for about 14 days before moving them to weed-free areas, (4) requesting that campers, hikers, and sportsmen who are recreating in weed infested areas, brush and clean themselves and their equipment before moving to uninfested areas, (5) minimizing unnecessary soil disturbance by vehicles, machinery, waterflow, and livestock, and (6) managing grasses for vigor and competition with weeds.

Step 3. Detecting and Eradicating New Introductions

Early detection and systematic eradication of weed introductions are central to lWM. Weeds encroach typically by establishing small "satellite" infestations, that are generally the spreading front of the large infestation. Eradication involves total removal of the weed and is achievable on a small scale. An eradication program involves delimiting the boundaries of the infestation, both on the ground and on maps, determining the proper control procedures, and the number and timing of follow-up applications. This generally requires aggressive annual applications of herbicides. Revegetation of infested areas might be required to eradicate weeds in areas that do not have an understory of desirable species that can reoccupy the area after weeds are controlled. Eradication of small patches requires continual monitoring and evaluation to ensure successful removal of the weed.

Step 4. Containing Large-Scale Infestations

Containment programs are generally used to restrict the encroachment of large-scale weed infestations. Studies have shown that containing weed infestations, which are too large to eradicate, is cost-effective because it preserves neighboring uninfested rangeland and enhances the success of future large-scale control programs. Containing a large-scale infestation requires using preventive techniques and spraying herbicides on the border of weed infestations to stop the advancing front of weed encroachment. Containment programs typically require a long-term commitment to herbicide application because they are designed to limit spread and are not designed to modify or reduce the infestation level. Roadways and railways, where weed infestations often begin, should be subjected to a constant prevention and containment program.

Step 5. Controlling Large-Scale Infestations

Most successful large-scale weed control programs are completed in a series of steps. Weed control areas should be divided into smaller units to make them more manageable. Weed control should be implemented unit by unit at a rate compatible with economic objectives.

lnitially, large-scale weed control should focus on rangeland sites with an understory of residual grasses and the highest potential productivity. Suppressed grasses have the greatest chance of reestablishing dominance on these sites. These areas areas must be spot treated each year to ensure control and minimize reinvasion. ln most cases, some percentage of the management unit will require that control measures be repeatedly applied until the weed seed bank and root reserves are exhausted.

Next, control efforts should focus on the sites adjacent to those initially treated to minimize reintroduction of the weeds. Usually, large-scale control is most effectively applied from the outside of the weed management unit inward toward its center. Selection and application of weed control techniques in large-scale control programs depends on the specific circumstances for each portion of the management unit. Control techniques used in one area of the management unit might be inappropriate for another area. For example, sheep grazing leafy spurge in one area might provide cost-effective control, but sheep do not readily consume spotted knapweed and herbicides might be more appropriate. Similarly, the most effective herbicide for a particular weed species might not be labeled for use in an environmentally sensitive area. Selection will depend on the (1) weed species,(2) effectiveness of the control technique, (3) availability of control agents or grazing animals, (4) land use, (5) length of time required for control, (6) environmental considerations, and (7) relative cost of the control techniques.

Researchers are currently determining if combining treatments will provide a synergistic (the effects of the treatment combination are greater than the sum effects of each treatment applied individually) response in controlling weeds. Some preliminary evidence suggests most control techniques are compatible. The later discussions of each weed species in this report include recommendations for treatment combinations that might be effective.

Step 6. Revegetation

Revegetation with desirable plants might be the best long-term alternative for controlling weeds on sites without an understory of desirable species. Establishing competitive grasses can minimize there invasion of rangeland weeds and provide excellent forage production. In most areas, a fall herbicide application after weeds have emerged with subsequent plowing or disking and drill seeding is most effective for establishing desirable species.

Step 7. Proper Range Management

Proper range management is especially critical during the management phase after weed control. Proper livestock grazing is essential to maintain competitive desirable plants, which will help prevent weed reinvasion after control. A grazing plan should be developed for any management unit involved in a weed management program. The plan should include altering the season of use and stocking rates to achieve moderate utilization of the herbaceous component. Grazing systems should rotate livestock to permit plants to recover before being regrazed and should promote litter accumulation. Range monitoring and annual evaluations should be conducted to determine the adequacy of existing management.

Noxious Weed Control Guidelines for an IWM Strategy

Use the following cultural, physical, biological, and chemical control guidelines to implement and determine the best method(s) for an integrated approach to noxious weed management. (U.S. Department of the Interior, Bureau of Land Management. 1994. Noxious weed strategy for Oregon/Washington. Oregon State Office, Portland, Oregon. BLM/OR/WA/PT-94/36+4220.9.)

Cultural

Prevention

1. Develop available preventive measures, such as quarantine and closure, to reduce the spread of the infestation.
2. Determine whether policy and laws allow for the use of all preventive measures, including local quarantine and closure.
3. If past management activities have allowed the introduction and spread of noxious weeds, determine how to change management after selecting a treatment method.

Livestock Manipulation

1. Determine whether changes in livestock grazing will affect the target weeds. Reduced grazing may allow for increased competition from beneficial vegetation or just allow for more seeds to be disseminated. Increased grazing may reduce beneficial vegetation or may be used to reduce seed source.
2. Determine whether changes in movement or type of livestock is necessary to reduce or contain the infestation due to movement of seeds on or in the animals.
3. Determine whether containing livestock in a weed free area prior to introduction to the area would prevent new infestations.

Wildlife Manipulation

1. Determine whether wildlife or wildlife feeding programs can be managed to reduce weed infestations.
2. Determine feasibility of changes in wildlife movement that would reduce or contain the infestation due to movement of seeds on or in the animals.

Soil Disturbance Activities

1. Revegetate all bare soil following disturbance.
2. Select plant species that will reduce the spread of noxious weeds.
3. Defer soil disturbance if possible until weeds are controlled or under management.

Rock Sources

1. Develop rock source management plans.
2. Keep utilization of rock source confined to existing contaminated roads.
3. Keep new or "clean" rock stockpiles separate from contaminated stockpiles.
4. Obtain rock from uncontaminated sources.

Public Use

1. Determine most feasible land use to reduce and prevent infestations.
2. Determine whether specific public awareness programs could reduce the infestation or control the spread of weeds.
3. Determine whether exclusion is a possibility and how it would affect the weed infestation.

Physical

Manual Control

1. Determine whether hoeing or "grubbing" will reduce (or increase) the infestation.
2. Determine whether hand pulling the weeds reduces the seed source.

Mechanical Control

1. Evaluate terrain to allow for mowing and determine whether it is an acceptable option for control of the spread of seeds.
2. Evaluate cultivation and other conventional farming practices options that could be utilized cost effectively.

Control by Burning

1. Determine whether policy and laws allow controlled burning and address regulations regarding smoke management.
2. Determine whether the terrain and vegetative cover allow for a controlled burn program.
3. Evaluate a controlled burn program to reduce the infestation.
4. Determine long-term effect of burning on nontarget species.

Biological

Natural Competition

1. Determine whether there are naturally occurring agents within the ecosystem which can reduce the infestation.
2. Determine which elements affect naturally occurring control agents. Determine whether these elements can be modified to reduce the negative effect on these agents. Determine whether these elements can be enhanced to increase the effectiveness of these agents on the weed infestation.

Introduced Competition

1. Determine whether biological control agents can be introduced into the ecosystem to reduce the amount of infestation.
2. Determine which introduced biological agents provide an acceptable control method for this infestation.
3. Evaluate if the biological control agent has been tested for adverse effects against all nontarget species within the treatment area.
4. Determine whether the introduced biological agent can survive in the environment of the treatment area.
5. Determine whether policy and laws allow for the introduction of biological control agents.
6. Determine whether policy and laws allow for introduction and grazing of livestock as a biological control measure.

Chemical

Fertilization

1. Determine whether chemical fertilization would reduce the amount of weeds by increasing competition of beneficial plant species.
2. Determine whether increased nitrogen (or other nutrients) would reduce weeds due to direct effect (for example, Curlycup gumweed).

Pesticides

1. Evaluate the acceptability of herbicides (or other pesticides) to control the infestation.
2. Determine whether pesticides are labeled for use on the target weed and use on the infested site (consider nontarget plants, soil type, groundwater location, topography, climate, state labeling). Determine the most effective application techniques.
3. Determine the most effective and cost-efficient types of conventional application equipment.
4. Determine whether properly trained personnel are available to apply the pesticides.

Table A. Broad-scale cover types in the project area and their susceptibility to invasion by 25 weed species (24 legally declared noxious, plus cheatgrass).

Cover Type	Brte[1]	Canu	Caspp	Cedi	Cema	Cere	Ceso	Cevi	Chju	Chle	Ciar	Civu	Crvu	Eues	Hagl	Hiau	Hipr	Isti	Lida	Livu	Lysa	Onac	Pore	Saae	Taas
Alpine Tundra	L[2]	L	L	L	L	L	L	L	L	L	M	M	L	L	L	M	L	L	M	L	L	L	L	U	L
Aspen	M	M	M	M	M	M	M	M	M	M	H	M	M	M	M	M	M	M	M	M	L	U	M	U	M
Big Sagebrush	H	U	M	M	M	M	M	M	M	U	M	M	L	M	M	L	L	H	M	M	L	M	U	H	M
Bitterbrush/ Bluebunch Wheatgrass	H	M	M	H	M	U	M	M	U	U	M	M	M	M	M	L	L	M	M	M	L	U	M	U	M
Chokecherry/ Serviceberry/Rose	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	H	M	M	M	M	M	U	M
Cottonwood/Willow	M	M	M	M	H	M	M	M	M	H	H	M	L	H	L	M	H	M	M	M	M	M	M	U	M
Cropland/ Hay/Pasture	M	M	H	M	H	M	H	M	H	M	M	M	M	H	M	M	M	H	M	M	L	M	M	U	M
Engelmann Spruce/ Subalpine Fir	H	H	M	M	M	M	M	M	M	H	H	H	L	M	L	M	M	L	M	M	M	U	M	U	M
Exotic Forbs/ Annual Grass	H	M	H	M	M	M	H	H	H	M	M	M	M	M	M	M	M	H	H	H	M	M	H	M	M
Fescue-Bunchgrass	H	H	M	H	H	M	H	M	M	M	H	H	M	H	M	L	L	H	H	H	L	M	H	H	M
Grand Fir/White Fir	M	M	M	M	M	M	M	M	M	M	M	M	L	M	L	M	U	L	M	M	M	U	M	U	M
Herbaceous Wetlands	M	M	M	M	H	M	H	M	L	H	H	M	L	M	L	H	M	M	M	H	H	M	H	U	M
Interior Douglas-fir	H	H	M	M	H	M	M	M	M	M	H	H	M	M	M	M	M	M	M	M	L	M	H	U	M
Interior Ponderosa Pine	H	M	M	H	H	M	M	M	M	M	M	M	M	M	M	L	L	M	M	M	L	M	H	U	M

Table A. Broad-scale cover types in the project area and their susceptibility to invasion by 25 weed species (24 legally declared noxious, plus cheatgrass) (continued).

Cover Type	Brte[1]	Canu	Caspp	Cedi	Cema	Cere	Ceso	Cevi	Chju	Chle	Ciar	Civu	Crvu	Eues	Hagl	Hiau	Hipr	Isti	Lida	Livu	Lysa	Onac	Pore	Saae	Taas
Juniper/ Sagebrush	M	M	M	M	M	U	M	M	M	U	M	M	L	M	M	L	L	H	M	M	L	U	U	U	M
Juniper Woodlands	M	M	M	M	M	U	M	M	M	U	M	M	L	M	M	L	L	M	M	M	L	U	M	U	M
Limber Pine	M	M	M	M	M	M	M	M	M	M	M	M	M	L	M	M	L	M	M	M	L	L	M	U	M
Lodgepole Pine	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	L	M	M	M	L	M	M	U	M
Low Sagebrush	M	U	M	M	U	U	M	M	U	U	M	M	L	M	M	L	L	H	M	U	L	U	U	U	M
Mixed-Conifer Woodlands	H	M	M	M	H	M	M	M	M	U	H	M	L	M	M	L	L	M	M	M	L	U	H	U	M
Mountain Big Sagebrush	H	M	M	M	M	M	M	M	M	U	M	M	L	M	M	L	L	H	M	M	L	M	M	U	M
Mountain Hemlock	M	M	M	M	M	M	M	M	M	M	M	M	L	L	L	M	M	L	M	M	M	L	M	U	M
Mountain Mahogany	M	M	M	M	M	M	H	M	U	U	M	M	M	M	M	L	L	M	H	M	L	U	M	H	M
Native Forb	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	L	L	M	M	M	M	M	H	U	M
Oregon White Oak	M	U	M	M	M	M	M	M	M	M	M	M	M	M	M	L	L	M	U	M	L	M	M	U	M
Pacific Ponderosa Pine	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	L	L	M	M	M	L	M	M	U	M
Pacific Silver Fir/ Mountain Hemlock	M	M	M	M	M	M	M	M	M	M	M	M	L	L	L	M	M	L	M	M	M	L	M	U	M
Red Fir	M	M	M	M	M	M	M	M	M	M	M	M	L	L	L	M	M	L	M	M	M	L	M	U	M
Salt Desert Shrub	M	M	M	L	L	M	L	M	L	L	M	M	L	M	H	L	L	L	L	L	L	L	L	U	L
Shrub or Herb/ Tree Regen	M	M	M	M	M	M	M	M	H	M	M	M	M	M	M	M	L	M	M	M	L	M	H	U	M

Shrub Wetlands	M	H	M	M	H	M	M	M	L	M	H	H	L	M	L	M	M	M	M	M	H	M	M	U	M
Sierra Nevada Mixed-Conifer	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	L	L	M	M	M	L	M	M	U	M
Western Larch	M	M	M	M	M	M	M	M	M	M	H	M	M	M	M	M	M	M	M	M	L	M	M	U	M
Western Redcedar/ Western Hemlock	M	H	M	M	M	M	M	M	M	H	H	H	L	M	L	M	M	L	M	M	M	U	M	U	M
Western White Pine	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	L	U	M	U	M
Wheatgrass Bunchgrass	H	M	M	H	H	M	H	M	M	M	H	M	M	M	M	L	L	H	H	M	L	M	H	H	M
Whitebark Pine	L	L	L	L	L	L	L	M	L	L	M	M	L	L	L	M	L	L	M	L	L	L	L	U	M
Whitebark Pine/ Subalpine Larch	L	L	L	L	L	L	L	L	L	L	M	M	L	L	L	M	L	L	M	L	L	L	L	U	L

[1] Species codes for exotic plants: Brte = cheatgrass; Canu = musk thistle; Caspp = whitetop; Cedi = diffuse knapweed; Cema = spotted knapweed; Cere = Russian knapweed; Ceso = yellow starthistle; Cevi = squarrose knapweed; Chju = rush skeletonweed; Chle = oxeye daisy; Ciar = Canada thistle; Civu = bull thistle; Crvu = common crupina; Eues = leafy spurge; Hagl = halogeton; Hiau = orange hawkweed; Hipr = yellow hawkweed; Isti = Dyers woad; Lida = dalmatian toadflax; Livu = yellow toadflax; Lysa = purple loosestrife; Onac = Scotch thistle; Pore = sulfur cinquefoil; Saae = Mediterranean sage; Taas = medusahead.

[2] Ratings representing susceptibility to invasion, and definitions:
(1) H = High susceptibility to invasion — Exotic plant species is an "invader" and invades the cover type successfully and becomes dominant or codominant even in the absence of intense or frequent disturbance;

(2) M = Moderate susceptibility to invasion — Exotic plant species is a "colonizer" and invades the cover type successfully because high intensity or frequency of disturbance impacts the soil surface or removes the normal canopy cover;

(3) L = Low susceptibility to invasion — Exotic plant species typically does not establish because the cover type does not provide suitable habitat; and

(4) U = Unknown susceptibility to invasion — Herbarium mount labels did not report the species at the collection site that existed in association with the mounted exotic plants, or ecological requirements of the exotic plant are not available in the literature, or there was a lack of distribution records (for example, herbaria mounts) for the exotic plant, or the extent of the cover type in the Project Area might be so minor as to prevent or restrict the probability of obtaining distribution records for the exotic plant within that cover type.

Table B. Description of broad-scale cover types in the project area used in Table A to characterize the susceptibility of vegetation types to invasion by weed species.

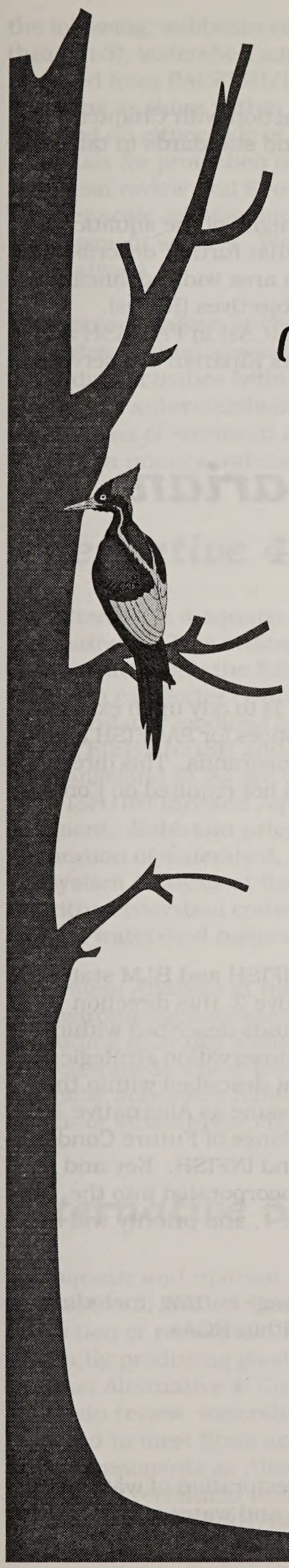
Cover Type	Description
Alpine Tundra	*Phyllodoce* spp. (low shrubs)
Aspen	*Populus tremuloides*
Barren	Rock/Barrenlands
Big Sagebrush	*Artemisia tridentata wyomingensis* *Artemisia tridentata tridentata/Elymus cinereus* *Artemisia tripartita/Agropyron cristatum* *Artemisia tripartita*/Exotic Herbs *Artemisia tridentata tridentata/Agropyron* spp. *Artemisia tridentata tridentata/Bromus tectorum* *Artemisia* spp./*Bromus tectorum* *Artemisia tripartita*
Bitterbrush/Bluebunch Wheatgrass	*Purshia tridentata/Bromus tectorum* *Purshia tridentata/Agropyron spicatum*
Chokecherry/Serviceberry/Rose	*Prunus virginiana/Amelanchier alnifolia/Rosa* spp.
Cottonwood/Willow	*Populus trichocarpa/Salix* spp. *Populus* spp./*Cornus* spp. *Populus* spp./*Poa pratensis*
Cropland/Hay/Pasture	Dryland Crop Dryland Pasture/Hayland Irrigated Crop Irrigated Pasture/Hayland
Engelmann Spruce/Subalpine Fir	*Picea engelmannii/Abies lasiocarpa*
Exotic Forbs/Annual Grass	Exotic Forbs Exotic Grass (*Bromus tectorum/Taeniatherum caput-medusae/Poa secunda*) Exotic Herbaceous Exotic Herbs Exotic Perennial Grass
Fescue-Bunchgrass	*Festuca idahoensis/Agropyron* spp. Low Productivity Perennial Grass Perennial Native Bunchgrass Perennial Native Herbaceous Seeded Native Grass (*Agropyron spicatum/Festuca idahoensis*) Seeded Native Grass (*Poa secunda/Agropyron spicatum*) Small Perennial Grass
Grand Fir/White Fir	*Abies grandis/Abies concolor*
Herbaceous Wetlands	*Carex nebraskensis* *Carex rostrata/Carex aquatilis* Grass/*Carex* spp. *Elymus* spp.
Interior Douglas-fir	*Pseudotsuga menziesii* var. *glauca* *Pseudotsuga menziesii/Abies grandis*/Exotic Herbs *Pseudotsuga menziesii/Abies grandis/Populus* spp./Shrub

Interior Ponderosa Pine	*Pinus ponderosa* var. *scopulorum* *Pinus* spp./*Populus* spp./Exotic Herbs *Pinus* spp./*Populus* spp./Shrub
Juniper/Sagebrush	*Juniperus* spp./*Artemisia arbuscula*/*Festuca idahoensis*/Forb *Juniperus* spp./*Artemisia* spp./*Agropyron* spp.
Juniper Woodlands	*Juniperus* spp./Exotic Herbs *Juniperus* spp./*Artemisia arbuscula*/Shortgrass *Juniperus* spp. Forest/Exotic Herbs *Juniperus* spp. Woodlands *Juniperus* spp./Native Bunchgrass *Juniperus* spp./*Poa secunda*
Limber Pine	*Pinus flexilis*
Lodgepole Pine	*Pinus contorta*
Low Sagebrush	*Artemisia arbuscula*/Native Forbs *Artemisia arbuscula*/*Bromus tectorum* *Artemisia arbuscula*/Native Bunchgrass *Artemisia* spp./*Poa secunda*
Mixed-Conifer Woodlands	Conifer/Exotic Herbs Conifer Encroachment/Exotic Grass Conifer Encroachment/*Artemisia* spp./Perennial Grass Conifer/Perennial Grass
Mountain Big Sagebrush	*Artemisia tridentata vaseyana*/Perennial Grass *Artemisia tridentata vaseyana*/Exotic Herbs *Artemisia tridentata vaseyana*/Perennial Herbs
Mountain Hemlock	*Tsuga mertensiana*
Mountain Mahogany	*Cercocarpus* spp.
Native Forb	*Deschampsia* spp./*Calamagrostis* spp. Exotic Moist Herbs Exotic Riparian Herbs Native Forbs Pioneer Forbs
Oregon White Oak	*Quercus alba*/Exotic Herbs *Quercus alba*/Shrub
Pacific Ponderosa Pine	*Pinus ponderosa* var. *ponderosa*
Pacific Silver Fir/Mountain Hemlock	*Abies amabilis*/*Tsuga mertensiana*
Red Fir	*Abies magnifica* var. *shastensis*
Salt Desert Shrub	*Sarcobatus vermiculatus* *Sarcobatus vermiculatus*/*Distichlis stricta* Salt Desert Shrub[1]
Shrub or Herb/Tree Regen	General Shrub Grass/Forb Mid Shrub West Cascades Mountain Shrub - No other Mountain Shrub/*Ceanothus* spp. Shrub/Regen
Shrub Wetlands	*Cornus* spp./*Crataegus* spp. Gravel Bar *Salix* spp. low/*Carex* spp.

Table B. Description of broad-scale cover types in the project area used in Table A to characterize the susceptibility of vegetation types to invasion by weed species (continued).

Cover Type	Description
	Salix spp. low/Grass
	Salix spp./*Calamagrostis* spp.
	Salix spp./*Carex* spp./*Castor canadensis*
	Salix spp./*Poa pratensis*
	Sarcobatus vermiculatus
Sierra Nevada Mixed-Conifer	Sierra Nevada Mixed-Conifer
Urban	Urban Land
Water	Water
Western Larch	*Larix occidentalis*
Western Redcedar/Western Hemlock	*Thuja plicata* /*Tsuga heterophylla*
Western White Pine	*Pinus monticola*
Wheatgrass Bunchgrass	*Agropyron cristatum*
	Agropyron cristatum/*Bromus tectorum*
	Agropyron spicatum
	Agropyron spp./*Poa secunda*
	Aristida longiseta
	Bromus tectorum
	Elymus cinereus
	Elymus cinereus/*Agropyron*
	Elymus cinereus/*Bromus tectorum*
	Exotic Annual Grass
	Fire Maintained Grass (*Poa secunda*/*Agropyron spicatum*)
	Native Perennial Grass
	Perennial Herbs
	Poa secunda/*Festuca octoflora*
	Poa pratensis
	Poa secunda
	Poa secunda/Perennial Forbs
	Seeded Exotic *Agropyron* spp.
	Sitanion hystrix
Whitebark Pine/Subalpine Larch	*Pinus albicaulis*/*Larix lyallii*
	Pinus albicaulis/ *Larix lyallii*/*Abies lasiocarpa*
Whitebark Pine	*Pinus albicaulis*

[1] Four representative plants in the Salt Desert Shrub type found within the Project Area are *Eurotia lanata* (winterfat), *Atriplex confertifolia* (shadscale), *Elymus cinereus* (Great Basin wildrye), and *Grayia spinosa* (spiny hopsage).



Appendix G Direction for RCAs and RMOs

(Comparable to Eastside Appendix 3-4)

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Introduction

The information in Appendix G is an integral element to be used in conjunction with Chapter 3 direction. The appendix information supports and guides the objectives and standards in table 3-5 and is not intended to stand alone.

The first section of this appendix provides an overview of the main components of the aquatic and riparian strategy by alternative. The overview is followed by two sections that further describe, by alternative, two components of the aquatic and riparian strategy: riparian area width delineation termed Riparian Conservation Areas (RCAs), and Riparian Management Objectives (RMOs). Riparian area widths were termed Riparian Habitat Conservation Areas (RHCAs) in PACFISH and INFISH; however, to avoid confusion, riparian area widths are referred to as Riparian Conservation Areas in all alternatives.

Overview of Aquatic and Riparian Strategies

Alternative 1

The basic concept for aquatic and riparian management under Alternative 1 is to rely upon existing direction within Forest Service and BLM land-use plans prior to Decision Notices for PACFISH and INFISH and BLM Statewide bull trout conservation strategies instruction memoranda. This direction varies among land-use plans. Ecosystem Analysis at the Watershed Scale is not required on Forest Service- or BLM-administered lands under Alternative 1.

Alternative 2

The strategy for Alternative 2 is based on direction within PACFISH and INFISH and BLM statewide bull trout conservation strategies instruction memoranda. Under Alternative 2, this direction becomes permanent and applies to Forest Service- or BLM-administered lands described within Decision Notices for PACFISH and INFISH and BLM Statewide bull trout conservation strategies instruction memoranda. On Forest Service or BLM-administered lands not described within the Decision Notices or instruction memoranda, management direction is the same as Alternative 1. Aquatic and riparian management goals (described in Chapter 3 Desired Range of Future Condition by alternative), RCAs, and RMOs are the same as those within PACFISH and INFISH. Key and priority watersheds identified for PACFISH and INFISH, respectively, are incorporated into the alternative. Watershed restoration rates would be greater than Alternative 1, and priority will be given to key and priority watersheds.

Ecosystem Analysis at the Watershed Scale is required prior to timber salvage cutting (including fuelwood) or construction of new roads, landings, or recreation facilities within RCAs.

Alternative 3

The Alternative 3 aquatic and riparian strategy emphasizes protection or restoration of watershed processes and functions, aquatic and riparian-dependent species' habitat, and water quality. This strategy applies to all Forest Service- or BLM-administered lands. Components of the strategy are

the following: subbasin review, Ecosystem Analysis at the Watershed Scale, subbasin categories (1 through 3), watershed and riparian restoration, RCAs, RMOs, and objectives and standards modified from PACFISH/INFISH. Aquatic and riparian management goals, RCAs, and RMOs are the same as those within PACFISH/INFISH, except that a minimum RCA width of 100 feet is required on either side of intermittent streams. Subbasin category objectives provide management emphasis for protection or restoration of watershed, riparian, and aquatic processes and functions. Subbasin review and Ecosystem Analysis at the Watershed Scale provide information to validate broader scale relationships and strategically prioritize ecosystem conservation or restoration management actions. Watershed restoration rates are greater than Alternative 2 but less than Alternative 4.

Ecosystem Analysis at the Watershed Scale shall be completed prior to any activity that requires an environmental assessment or environmental impact statement (1) in Category 1 subbasins (excluding activities within Wilderness Areas except human-ignited prescribed fires) or (2) within stronghold subwatersheds, bull trout fringe subwatersheds, subwatersheds containing wild populations of steelhead or ocean- or stream-type chinook salmon, or Snake River salmon or bull trout high priority watersheds.

Alternative 4

The Alternative 4 aquatic and riparian strategy emphasis and components are similar to Alternative 3. This strategy applies to all Forest Service- or BLM-administered lands. Components of the strategy are the following: subbasin review, Ecosystem Analysis at the Watershed Scale, subbasin categories (1 through 3), watershed and riparian restoration, RCAs, RMOs, and objectives and standards modified from PACFISH/INFISH. Aquatic and riparian management goals are based on PACFISH/INFISH and the Northwest Forest Plan. Forestland RCAs are delineated into zones, and rangeland RCAs are delineated by floodprone width. Two RMO value options, based on PACFISH/INFISH and Aquatic SIT assessment information, are presented for public review and comment. Subbasin category objectives provide management emphasis for protection or restoration of watershed, riparian, and aquatic processes and functions. Subbasin review and Ecosystem Analysis at the Watershed Scale are used to provide information to strategically prioritize ecosystem conservation or restoration management actions. This alternative has the highest watershed restoration rate.

Ecosystem Analysis at the Watershed Scale shall be completed prior to any activity that requires an environmental assessment or environmental impact statement (1) in Category 1 subbasins (excluding activities within Wilderness Areas except human-ignited prescribed fires) or (2) within subwatersheds where federally listed or proposed species or their habitats, or recently occupied or currently accessible habitat for federally listed and proposed species, or populations of steelhead or ocean- or stream-type chinook salmon, would be affected.

Alternative 5

The aquatic and riparian strategy emphasis and components vary among priority areas in Alternative 5. Within timber, recreation, and livestock priority areas, the emphasis is on the protection or restoration of riparian and aquatic processes and functions and water quality while efficiently producing goods and services. Emphasis within aquatic and wildlife priority areas is the same as Alternative 4. Components of the strategy within timber and livestock priority areas are subbasin review, watershed and riparian restoration, RCAs, RMOs, and objectives and standards designed to meet State and Federal laws. Recreation, wildlife, and aquatic priority areas have the same components as Alternative 4, except that recreation priority areas have different standards specific for recreation management. Aquatic and riparian management goals for all priority areas are based on PACFISH/INFISH. Timber priority area RMOs and RCAs are determined through site-specific analysis, or through ecosystem analysis if site-level information is inadequate to identify

protection of stream input functions. No RMOs or RCAs are identified for livestock priority areas; however, other objectives and standards apply (See table 3-5). Watershed restoration is consistent with priority area emphasis with an overall rate similar to Alternative 3.

Ecosystem Analysis at the Watershed Scale is not required in timber and livestock priority areas.

Alternative 6

Under Alternative 6, the aquatic and riparian strategy emphasis and components, subbasin review, goals, objectives and standards, RCAs, and RMOs are the same as Alternative 4 except for ecosystem analysis requirements. Watershed restoration rates are slightly less than Alternative 4.

Ecosystem Analysis at the Watershed Scale is required in the following situations:

- prior to any activity that requires an environmental assessment or environmental impact statement in Category 1 subbasins (excluding activities within Wilderness Areas except human-ignited prescribed fires); or
- prior to any activity that requires an environmental assessment or environmental impact statement in a subwatershed that would affect federally listed, proposed, or candidate species or their habitats; or recently occupied or currently accessible habitat for federally listed and proposed species; or strongholds and fringe populations of redband trout, westslope cutthroat, or Yellowstone cutthroat trout; or
- prior to road density increases in subwatersheds with road densities less than 0.7 miles per square mile; or
- prior to activities that require an environmental assessment or environmental impact statement and that significantly modify large blocks of native rangeland.

After a four-year transition period, Ecosystem Analysis at the Watershed Scale shall be completed on all land administered by the Forest Service or BLM prior to any activity that requires an environmental assessment or environmental impact statement unless exempted by a screening process.

Alternative 7

The aquatic and riparian strategy of Alternative 7 emphasizes protection or restoration of watershed processes and functions, aquatic and riparian-dependent species' habitat, and water quality; it includes a system of large reserves and other unroaded areas larger than 1,000 acres (see Chapter 3, Theme and Design of Alternative 7). Components of the strategy are the same as Alternative 3, 4, and 6 except for the system of reserves and a coarse screening process. Aquatic and riparian management goals are similar to the Northwest Forest Plan. RCA definitions are the same as Alternative 2 except that a minimum width of 150 feet is required on either side of intermittent streams. RMO variables and values are expanded from PACFISH/INFISH based in part on other information as described in the RMO section for Alternative 7. Subbasin category and reserve management objectives and standards provide management emphasis for protection or restoration of watershed, riparian, and aquatic processes and functions. Subbasin review and Ecosystem Analysis at the Watershed Scale are used to provide information to strategically prioritize ecosystem conservation or restoration management actions. Overall, this alternative has the lowest active watershed restoration rate.

Ecosystem Analysis at the Watershed Scale is required in the following situations:

- prior to any activity that requires an environmental assessment or environmental impact statement in Category 1 subbasins (excluding activities within Wilderness Areas except human-ignited prescribed fires); or

- prior to any activity that requires an environmental assessment or environmental impact statement in a subwatershed that would affect federally listed and proposed species or their habitats, or recently occupied or currently accessible habitat for federally listed and proposed species; or
- prior to road density increases in subwatersheds with road densities less than 0.7 miles per square mile; or
- prior to timber harvest in RCAs; or
- prior to management actions in subwatersheds that have more than 10 percent of the area affected by fire; or
- prior to issuing water conveyance permits.

Direction for RCAs and RMOs

RCA widths and RMO values are standards. The mechanism for modifying RCA widths and RMO values varies among alternatives and is identified in standard EM-S13. In Alternative 1, modifications are identified in individual land-use plans. Generally in Alternative 2, RCA and RMO modification will require completion of Ecosystem Analysis at the Watershed Scale to provide the ecological basis for change, but widths and values can be modified in the absence of Ecosystem Analysis at the Watershed Scale where stream reach or site-specific data support the change. In Alternatives 3, 4, 5 (outside timber and livestock priority areas), and 7, RCA widths and RMO values can be changed only after conducting Ecosystem Analysis at the Watershed Scale. In Alternative 6 during the first four years, RCA widths and RMO values can be adjusted with Ecosystem Analysis at the Watershed Scale or with site-specific analysis if conditions in EM-S13 are met. After four years, RCA widths and RMO values can be adjusted only after conducting Ecosystem Analysis at the Watershed Scale. In all alternatives, the following shall be documented: 1) whether standard RCA widths and RMO values were used or whether modifications were made; 2) the rationale for using standard widths or modifications; and 3) the effects of modifications.

Riparian Conservation Areas (RCAs)

Introduction

Riparian systems are water-influenced areas that include streams and other aquatic ecosystems. Riparian Conservation Areas (RCAs) are portions of watersheds where aquatic and riparian-dependent resources receive primary emphasis and where management activities are subject to specific standards and guidelines. Riparian Conservation Areas include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by: (1) influencing the delivery of coarse sediment, organic matter, and woody debris to streams; (2) providing root strength for channel stability; (3) shading the stream; and (4) protecting water quality.

In RCAs, maintenance, protection, and restoration of aquatic processes and functions are emphasized and goals and objectives for aquatic and riparian habitats are met. Conservation needs for aquatic and riparian systems can be summarized by the following four principles:

1. A stream requires nutrient inputs and energy to sustain its biological functions.
2. Riparian-associated plants and animals rely on the vegetation adjacent to streams.
3. Small streams are more affected by hillslope processes than larger streams.

4. The likelihood of disturbances resulting in instream effects increases as adjacent slopes become steeper.

Alternative 1

Most existing land-use plans identify riparian area boundaries that focus on water quality and habitat components through application of Best Management Practices. Typically these widths differ among land-use plans.

Alternative 2

In Alternative 2, riparian areas will be delineated in watersheds as described in the Decision Notices for PACFISH (2/24/95) and INFISH (7/28/95) for use on Forest Service-administered lands, and for PACFISH (2/24/95) and Statewide bull trout conservation strategy for BLM-administered lands. Delineation will be as described below. The RCA widths may be increased where necessary to achieve riparian management goals and objectives, or decreased where widths are not needed to attain RMOs or avoid adverse effects to aquatic and riparian-dependent species. Standard RCA widths for the following categories of stream or water body shall be delineated as follows:

Fish-bearing streams: RCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site potential trees, or 300 feet slope distance (600 feet, including both sides of the stream channel), whichever is greatest.

Permanently flowing non fish-bearing streams: RCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site potential tree, or 150 feet slope distance (300 feet, including both sides of the stream channel), whichever is greatest.

Ponds, lakes, reservoirs, and wetlands greater than one acre: RCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or to the extent of moderately and highly unstable areas, or to a distance equal to the height of one site potential tree, or 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs, or from the edge of the wetland, pond, or lake, whichever is greatest.

Seasonally flowing or intermittent streams, wetlands less than one acre, landslides, and landslide-prone areas: This category includes features with high variability in size and site-specific characteristics. At a minimum the RCAs must include:

a. the extent of landslides and landslide prone areas.
b. the intermittent stream channel and the area to the top of the inner gorge.
c. the intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation.
d. for key and priority watersheds as defined by PACFISH and INFISH, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest.

e. for watersheds not identified as key or priority watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide prone area to a distance equal to the height of one-half site potential tree, or 50 feet slope distance, whichever is greatest.

In non-forested rangeland ecosystems, the RCA width for permanently flowing streams, fish-bearing and non fish-bearing is the extent of the 100-year floodplain.

Alternative 3

RCA delineation is the same as Alternative 2, with the following exceptions:

- RCAs will be delineated for all Forest Service- and BLM-administered lands within the project area (as opposed to only watersheds containing anadromous and native inland fish or bull trout as in Alternative 2).
- All intermittent streams will receive a minimum of 100 feet width on either side of the stream.
- Ecosystem Analysis at the Watershed Scale shall be completed prior to modifying RCA widths.

Alternatives 4 and 6

Ecological functions, processes, and disturbance mechanisms are guides for use and protection priorities in riparian areas. Boundaries between riparian areas and upslopes may need adjustment to address each of the larger scale disturbance effects that may negatively or positively affect unique habitats or sensitive species in riparian environments. The actual size of riparian areas depends on local characteristics that define them; the dimensions of entire riparian areas are not always proportional to the size of aquatic systems.

RCAs are delineated into zones or gradients of influence, with an inner zone (zone 1) where many primary processes and functions occur and an outer zone (zone 2) where processes and functions occur but at different, less important (secondary) levels to the stream channel. The outer riparian zone also functions as a transition and buffer between upslope uses and disturbances and the aquatic environment. Zoning delineates major influence areas, establishing a basis for different levels of disturbance and vegetation management in each zone. This scheme sets the foundation for cumulative effects determination that is spatially-sensitive in considering watershed disturbance.

Although the concept of zones applies to forestland and rangeland environments, it is more difficult to apply in rangelands. For the purposes of this document, zones are delineated only in forested environments. In rangeland environments, floodprone width is used to delineate RCAs.

Forested Lands

Zone 1 is the inner riparian area; it is the primary riparian community and energy influence area. It is most important for protection and maintenance of instream conditions. It also serves to transition processes, functions, and disturbances from streams to floodplains and adjacent riparian areas. Zone 1 is the area most sensitive to land management activities.

Zone 2 is the outer riparian area. It supports additional riparian area processes and functions (for example, microclimate) and also is a buffer area capable of absorbing disturbances from the uplands. It is the interface and transition between the inner riparian area and the uplands. In steeper landscapes where soils are subject to surface erosion this zone may need extension using the slope adjustment factor. This extended area is referred to as Zone 2b in table 3-5.

Areas with landslides or that are unstable or landslide prone will also be included in the RCA.

Table 1 displays the dominant processes, functions, and disturbance mechanisms for the two riparian zones in perennial and intermittent stream environments. The table is not inclusive. Perennial and intermittent streams were separated because processes, functions, and disturbance mechanisms for these systems are different. Intermittent streams often have steeper adjacent sideslopes and can be more prone to slope instability.

RCA Delineation Process

RCA delineation is based on three indicators: site potential tree heights (see discussion below), extent of floodprone width, or riparian vegetation width, whichever provides the greatest protection to aquatic and riparian resources.

Site Potential Tree Height (SPTH). The definition of "site potential tree" for purposes of defining widths is: "The average maximum height of the tallest dominant trees (200 years or older) for a given site class" (FEMAT 1993, p.V-34).

The following site potential tree heights shall be used as minimum heights for the three forested potential vegetation groups (PVGs) in the project area.

PVG	Minimum SPTH (feet)
Dry Forest	120
Moist Forest	150
Cold Forest	90

Table 1. Dominant Processes, Functions, and Disturbance Mechanisms for Perennial and Intermittent Streams.

Variables	Perennial/Intermittent Zone 1	Perennial Zone 2	Intermittent Zone 2
Shade for stream temperature	P	S	n/a
Shade for riparian species	P	S	P
Large wood delivery to streams	P	S	P
Large wood delivery to riparian areas	P	P	P
Leaf and other organic matter inputs	P	S	S
Riparian microclimate	P	S	P
Buffer for water quality	P	P	P
Nutrient and energy to streams	P	S	S
Habitat: aquatic species	P	S	S
Habitat: riparian dependent species	P	S	P
Habitat/migration for terrestrial species	P	P	P
Root strength	P	S	S
Soil moisture & temperature	P	S	P
Sediment trapping	P	S	P
Flooding *	P	S	S
Debris flows	P	P	P
Fire*	S	S	P
Insects and Disease *	S	S	P

P=primary emphasis; S=secondary emphasis;
*Primary natural disturbance mechanisms

The average height for dominant trees on any given site is a function of tree capabilities and site quality. Tree capabilities include species and genetic influences. Site quality refers to a complex integration of physical, chemical, and biological elements. The heights presented in the table above are coarse averages based on data (site index tables) from the project area for several different tree species on average to good sites. Local site index tables, species-specific tables, or site-specific data provide more accurate information than these averages. See table 3-5 for direction on modification.

Slope Adjustment Factor. Adjustment of stream RCA widths for slope uses a curve based on probable sediment travel distance from concentrated sources of erosion and sediment from roads (Ketcheson and Megahan 1996). The curve does not predict the volume of sediment reaching a stream or moving a certain distance, but rather predicts probabilities that road-related sediment particles will travel at least as far as the distance calculated using the curve. The curve is based on data from Idaho batholith soils (Ketcheson and Megahan, 1996); it may over-predict erosional processes for less erodible soils and may under-predict sediment transport for finer particles of eroded material.

Other research (Megahan and Ketcheson 1996) found that in addition to slope, other significant predictors of transport distance were sediment volume, amount of obstructions, and source area. Volume alone accounts for 78 percent of the variance in sediment transport distance in the Megahan and Ketcheson data set, and is therefore a useful predictor of risk of sediment travel distance exceedance. Different levels of risk can be defined by varying volumes of sediment according to the distribution of the samples in the Megahan and Ketcheson data set.

The general relationship of slope to sediment travel distance can be used as a simple and universal method of defining zone 2b that is sensitive to slope gradient, as shown in figure 1. Figure 1 describes sediment travel distance as a function of slope gradient, for median values of obstructions and source area. For this curve the 90th percentile of volume is used to predict the transport distance that is, on average, exceeded only 10 percent of the time for any given slope. While not available prior to publication of the draft EIS, direction for using curves representing other percentiles should be evaluated.

The process for delineation of forested riparian areas (perennial and intermittent streams) involves dividing RCAs into two zones:

A. Minimum Widths for Perennial Streams

Zone 1 equals one site potential tree height, or the extent of the floodprone area, or the extent of wet and moist riparian vegetation, whichever best maintains, protects, and restores the aquatic environment.

Zone 2 equals one site potential tree height or the extent of dry riparian vegetation (zone 2a), plus any width added for slope adjustment using figure 1 (zone 2b).

B. Minimum Widths for Intermittent Streams

Zone 1 equals one-half site potential tree height, or the extent of the floodprone area, or the extent of wet and moist riparian vegetation, whichever best maintains, protects, and restores the aquatic environment

Zone 2 equals one-half site potential tree height, or the extent of dry riparian vegetation (zone 2a), plus any width added for slope adjustment using figure 1 (zone 2b).

C. Additional Requirements Applicable for all Streams

Additional special consideration is necessary where there are landslides and in landslide prone or unstable areas. Landslide prone determination shall be based on the procedure outlined in Tang and Montgomery (1995) or other comparable techniques.

D. Total RCA Width

Total RCA width is the sum of the widths determined from steps A through C.

Example: A perennial stream and an intermittent stream with a 40 percent sideslope, in moist forest (150 foot SPTH), would have the following RCA width:

Perennial Stream RCA: 1 SPTH (zone 1) + 1 SPTH (zone 2a) + 10 (zone 2b) + 0 (landslide prone) = 310 feet (each side of the stream).

Intermittent Stream RCA: ½ SPTH (zone 1) + ½ SPTH (zone 2a) + 160 (zone 2b) + 0 (landslide prone) = 310 feet (each side of the stream).

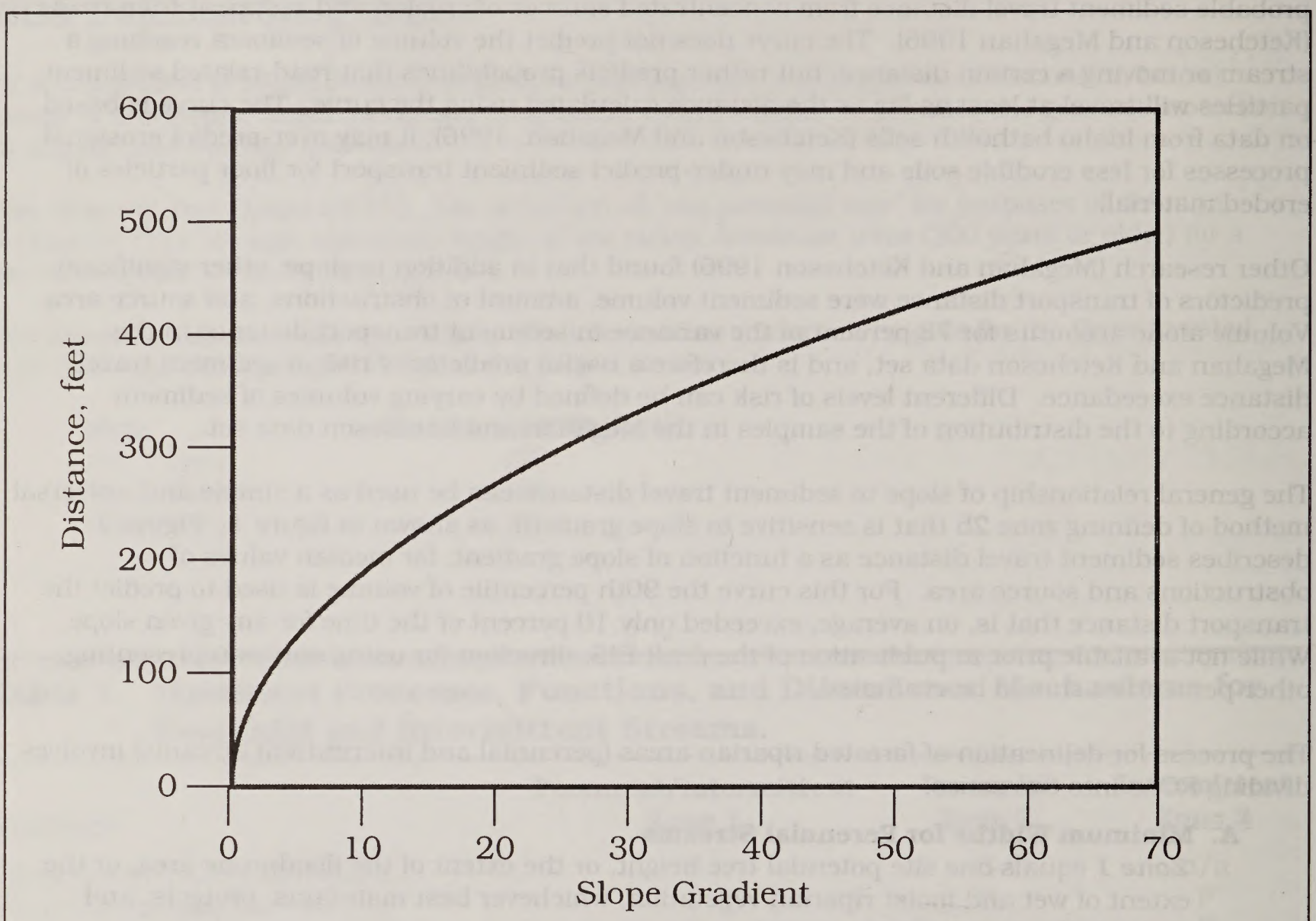


Figure 1. Slope Adjustment for Adding Width (Zone 2b) to Zone 2 for Intermittent Streams.

Rangeland Streams

The process of delineation for rangeland riparian RCAs (perennial or intermittent streams) relies on floodprone widths by stream type, or the extent of potential natural riparian vegetation, whichever provides the greater protection to aquatic and riparian resources. Riparian vegetation can be delineated by aerial photographs or field inspection. Floodplain area is essentially equivalent to floodprone width defined by Rosgen (1994).

The following steps can be used to determine the floodprone area. It is suggested that field units develop relationships between bankfull width and drainage area or use existing relationships for their area.

1. Determine bankfull width for the drainage area above the point on the stream.
2. Determine the stream type using Rosgen stream types (Rosgen 1994) from aerial photographs or existing classification data.

3. Select the entrenchment ratio (ER), which is the average maximum, for the particular stream types (level I) from the following:

Stream type	A	B	C	E	F	G
Entrenchment Ratio	1.4	2.2	5.3	56.9	1.2	1.3

   Because entrenchment ratio is non-applicable in D streamtypes (braided systems), riparian width shall be determined on a case by case basis using site-specific or local information.

4. Calculate the floodprone area by multiplying the bankfull width and entrenchment ratio.

Local drainage area and bankfull width relationships should be used in place of figure 2. Likewise, if field verified entrenchment ratios are known, this data should also be used in place of the average maximums shown in step 3.

Example: A stream which has a drainage area of 100 square miles has an estimated bankfull width of 45 feet (figure 2 (Emmett 1975)). The stream type is known to be an C from classification data. The average maximum entrenchment ratio, or ER, for a C is 5.3. Multiplying the ER by the bankfull width (45 X 5.3) equals a floodprone width of 238 feet (for each side of the stream).

Forested Land and Rangeland Ponds, Lakes, Reservoirs, and Wetlands

RCAs for ponds, lakes, reservoirs, and wetlands greater than one acre consist of:

- the body of water or wetland and the area to the outer edges of the riparian vegetation, or
- the extent of the seasonally saturated soil, or
- the extent of moderately and highly unstable areas, or
- a distance equal to the height of one site potential tree, or
- 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake, whichever is greatest.

For ponds, lakes, reservoirs, and wetlands less than one acre, the above RCA delineation shall apply, except that the minimum slope distance shall be 100 feet.

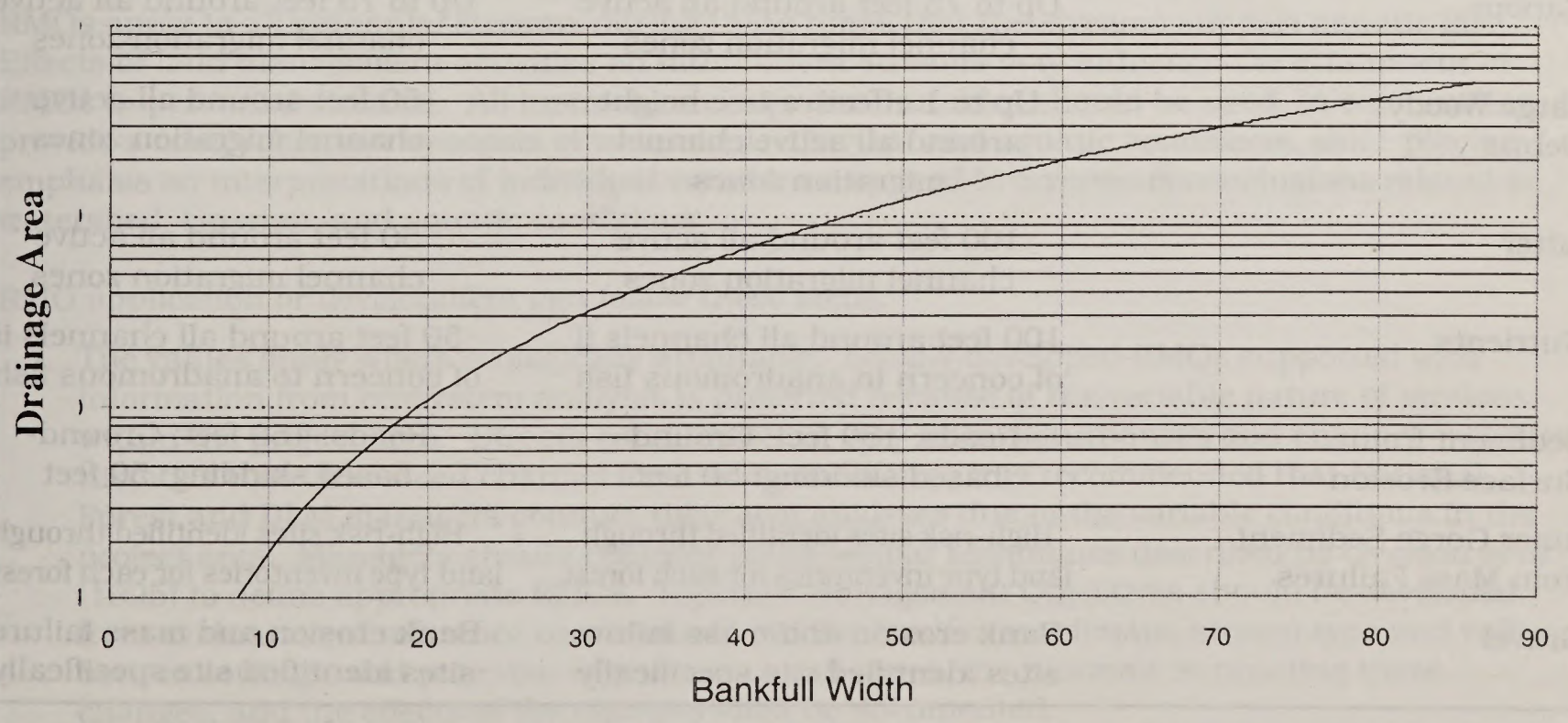


Figure 2. Relationship Between Bankfull Width and Drainage Area.

Alternative 5

RCA width varies among priority areas.

Timber and livestock priority areas. In forested potential vegetation groups, RCA widths are based on the maximum needed to provide for individual stream input processes, and are defined by table 2. Functions requiring protection are determined by site-specific analysis, and by ecosystem analysis only if site analysis does not provide the necessary information.

In rangeland potential vegetation groups, no specific RCAs are delineated; however, there are requirements in table 3-5 for Proper Functioning Condition (PFC) and maintenance and protection of water quality.

Other priority areas. RCA delineation as described under Alternative 4 shall apply.

Alternative 7

Delineation of RCA widths are the same as for Alternative 2 with the following exceptions:

- All intermittent streams require 150 feet minimum width.
- Ecosystem Analysis at the Watershed Scale is required prior to changing any standard width.

Table 2. RCA Widths, Timber Priority Areas, Alternative 5

Function	Medium to Large Streams	Small Streams
Water/Bank Stability: Constrained Channels	Up to 20 feet	Up to 20 feet
Water/Bank Stability: Unconstrained Channels	Up to 1 effective tree height around all active channel migration zones	Up to 1 effective tree height around all active channel migration zones
Canopy	Up to 75 feet around all active channel migration zones	Up to 75 feet around all active channel migration zones
Large Woody Debris	Up to 1 effective tree height around all active channel migration zones	50 feet around all active channel migration zones
Litter	100 feet around all active channel migration zones	50 feet around all active channel migration zones
Nutrients	100 feet around all channels if of concern to anadromous fish	50 feet around all channels if of concern to anadromous fish
Sediment from Surface Erosion	Roads: 150 feet; Ground-based skidding: 50 feet	Roads: 150 feet; Ground-based skidding: 50 feet
Inner Gorge Sediment from Mass Failures	High-risk sites identified through land type inventories for each forest	High-risk sites identified through land type inventories for each forest
Gravel	Bank erosion and mass failure sites identified site specifically	Bank erosion and mass failure sites identified site specifically

SOURCE: Northwest Forest Resources Council 1995.

Riparian Management Objectives (RMOs)

Introduction

Riparian Management Objective (RMO) values for stream channel conditions, when used in combination with objectives of the Interior Columbia Basin Ecosystem Management Project (ICBEMP), provide criteria to help assess attainment of aquatic and riparian goals as described in the Desired Range of Future Conditions (DRFC; see Chapter 3). These values provide a description and characterization of watershed, riparian, and stream channel processes and existing conditions that can be used to guide management activity design, implementation, and monitoring. RMOs are not expected to be met instantaneously but rather would be achieved over time.

As indicated below, some RMOs apply to forested ecosystems, some to rangeland ecosystems, and some to all ecosystems. Actions that reduce habitat quality are inconsistent with the purpose of ICBEMP direction. However, the intent of RMOs are not to establish a ceiling for what constitutes good habitat conditions. The following statements provide the intent for use of the RMOs and their purpose in a comprehensive conservation program:

1. RMOs are criteria to help evaluate progress towards attainment of watershed, aquatic and riparian goals described within the DRFC.
2. Interim RMOs are not to be viewed as independent from other components of the aquatic conservation strategy; rather, they are part of an aquatic conservation program. RMOs are not always sensitive to immediate effects but rather exhibit response to cumulative effects and factors influencing channel history over time.
3. Interim RMOs do not replace State and Federal water quality standards promulgated under Federal Clean Water Act or State laws, but they should complement these standards in providing measurable habitat attributes.

Procedure for RMO Application

RMOs apply to all perennial streams during those times that the streams support aquatic life. Effects of land management activities on intermittent streams may influence the attainment of RMOs in perennial streams. All instream and riparian variables should be used, in combination, to provide a comprehensive synopsis of watershed, riparian, and aquatic conditions, since placing emphasis on interpretations of individual variables may lead to erroneous conclusions related to watershed, riparian, and aquatic conditions.

RMO application or development can follow these steps:

1. The values apply where ecologically attainable. Locally developed RMOs supported with information from ecosystem analysis is preferred because of the variable nature of streams within the project area. Stream conditions can vary from disturbances and channel evolution histories that influenced channel form and conditions. It is recommended that National Forest and BLM managers conduct their own analyses due to the variable conditions in the project area. Managers should consider using similar techniques described by Overton et al. (1995) to define appropriate RMOs. Riparian Management Objectives should be developed from evaluation of reference conditions in similar landforms, climate, stream type and valley bottom settings, and potential vegetation. In all cases, the rationale supporting these changes, and the effects of the changes shall be documented.

2. Use information from step 1 to develop management actions for conserving or restoring watershed, riparian, and channel processes.
3. Monitor implementation and effectiveness of management actions to determine if they have the intended results. Provide feedback information for future management objectives, actions, and evaluation of RMOs.

Alternative 1

Most existing land-use plans identify aquatic and riparian habitat variables that are used to measure condition and assess attainment of land-use plan goals and objectives. Typically, these variables differ among land-use plans.

Alternatives 2 and 3

In PACFISH (2/24/95) and INFISH (7/28/95), landscape-scale RMO values describing good habitat for anadromous and inland native fish were developed, using stream inventory data for pool frequency, large woody debris, bank stability, lower bank angle, and width-to-depth ratio. Applicable published and non-published scientific literature was used to define favorable water temperatures. All of the described habitat features may not occur in a specific segment of stream within a watershed, but all generally should occur at the watershed scale for stream systems of moderate to large size (3rd to 6th order).

Riparian Management Objective values represent a good starting point to describe the desired condition for fish habitat. National Forest and BLM managers are encouraged to establish site-specific RMOs. Riparian Management Objectives should be refined to better reflect conditions that are attainable in a specific watershed or stream reach based on local landform, climate, stream type and valley bottom settings, and potential vegetation. Modification of RMO values in Alternative 2 requires completion of Ecosystem Analysis at the Watershed Scale or site-specific analysis to provide the ecological basis for the change. In Alternative 3, modification of RMO values requires completion of Ecosystem Analysis at the Watershed Scale. In all cases, the rationale supporting these changes and the effects of the changes shall be documented.

Riparian Management Objective values for six environmental features are identified in table 3. These features are good indicators of ecosystem health, are quantifiable, and are subject to accurate, repeatable measurements.

Alternatives 4 and 6

RMO values for Alternatives 4 and 6 describe watershed-scale (5th- to 6th-field HUC) habitat conditions for both EIS planning areas within the Interior Columbia Basin Project area. Attributes are divided into two categories: Instream variables and riparian vegetation. Two options for some RMO values are presented here for public review and comment.

In Alternative 4, modification of RMO values requires completion of Ecosystem Analysis at the Watershed Scale. In Alternative 6, Ecosystem Analysis at the Watershed Scale or site-specific analysis can be used to modify RMO values if the change results in equal or greater protection to aquatic and riparian-associated species. Standard EM-S13 describes modification conditions and procedures. The values in tables 4 and 5 shall apply if ecosystem analysis or site-specific NEPA analysis is not completed.

Table 3. RMO Values for Alternatives 2 and 3

Habitat Feature	Values									
Pool Frequency (all systems) Varies by channel width.	Wetted width (feet)	10	20	25	50	75	100	125	150	200
	Pools per mile	96	56	47	26	23	18	14	12	9
Water Temperature	No measurable increase in maximum water temperature (7 day moving average of daily maximum temperature measured as the average of the maximum daily temperature of the warmest consecutive 7 day period). Maximum water temperatures below 59°F within adult bull trout holding habitat and below 48°F within bull trout spawning and rearing habitats. Maximum water temperatures below 64°F within anadromous fish migration and rearing habitats and below 60°F within anadromous fish spawning habitats.									
Large Woody Debris (forested systems)	> 20 pieces per mile; > 12 inch diameter; > 35 foot length.									
Bank Stability (rangeland systems)	> 80 percent stable.									
Lower Bank Angle (rangeland systems)	> 75 percent of banks with <90 degree angle (i.e., undercut).									
Width/Depth Ratio (all systems)	< 10, mean wetted width divided by mean depth									

Procedure for Determining Riparian Vegetation RMO

Functionality of aquatic and riparian environments can be more fully evaluated with the inclusion of riparian vegetation. Riparian vegetation is generally more sensitive to immediate effects from management activities. In some vegetation and valley bottom settings, riparian vegetation can be responsive to restoration in short timeframes. Most instream RMOs are dependent upon riparian vegetation condition; therefore, a riparian vegetation RMO was included for Alternatives 4 and 6.

The following steps summarize a method to assess similarity of current riparian vegetation to potential riparian vegetation based on information presented within the ICBEMP area. The *Riparian Plant Association Groups and Associated Valley Bottom Types of the Columbia River Basin* (Manning and Engelking 1995) should be used to determine the riparian vegetation RMO. See figure 3 for a complete display of the five steps for assessing similarity.

1. Identify the Potential Vegetation Group (PVG) in which the riparian area occurs (for example, dry forest).
2. Compare the existing vegetation with the probable riparian vegetation to assess how similar or dissimilar the existing riparian vegetation is to the potential.

The existing riparian vegetation should be at least 60 percent similar to the potential vegetation to meet the RMO. If there is less than 60 percent similarity and it is not attributable to absence of the potential riparian vegetation group within the valley bottom setting, then management actions that move riparian vegetation toward the potential should occur.

Table 4. RMO Values for Alternatives 4 and 6

Category	Values (Applicable where ecologically attainable)[1]
I. Instream Variables	
Option A	
Large Pool Frequency	To be developed
Pool Frequency (all systems) Varies by channel width.	Wetted width (feet) 10 20 25 50 75 100 125 150 200 Pools per mile 96 56 47 26 23 18 14 12 9
Pool Depth/Width	To be developed
Large Wood Frequency (forested systems)	> 20 pieces per mile; > 12 inch diameter; > 35 foot length.
Fine Sediment	< 20% surface fine sediment (6.4 mm) in spawning habitat or < 30% cobble embeddedness in rearing habitat.
Option B	
Large Pool Frequency Pool Frequency Pool Depth/Width Large Wood Frequency (forested systems) Single Wood Frequency (forested systems) Fine Sediment	**See Table 5 for values**
Bank Stability (non-forested systems)	>80 percent bank stability in ERUs 1-12 >90 percent bank stability in ERU 13 (Overton et al. 1995)
Temperature	For waters supporting cold water beneficial uses - except bull trout habitat and salmonid spawning, incubation, and fry emergence - the maximum temperature will be below 64°F. In waters supporting salmonid spawning, incubation, and fry emergence except bull trout, the maximum temperature will be below 55°F for the specific times of the year when these uses occur. In waters supporting bull trout habitat the maximum temperature will be below 50°F, except for those periods of spawning to fry emergence when the maximum temperature will be below 48°F. All temperatures will be measured as a 7-day moving average of daily maximum temperature.
II. Riparian Vegetation	Applies to all forest and range riparian areas: mature and old forest, and late ecological status range riparian conditions adapted to fire regimes and other disturbances characteristic for the site. Riparian vegetation RMOs should be measured by the percent similarity of current riparian vegetation to the mature forest and late ecological status range riparian community/composition. The percent similarity shall be greater than 60 percent (USDA 1992). The stepwise procedure for determining similarity is outlined in figure 3 and in the riparian vegetation RMO discussion.

[1] Where values are not ecologically attainable, data and rationale to support this conclusion shall be documented. RMOs values shall be met as closely as ecologically possible.

Table 5. Instream RMO values for Option B*.

EIS Area[1]	Slope Class	Large Pools Per Average Riffle Width[2]		Pools Per Average Riffle Width[3]		Mean Max Depth/Pool Width		Single Wood Per Average Riffle Width[4]	
		Percentile							
		50	75	50	75	50	75	50	75
UEIS	<2%	0.04	0.07	0.08	0.12	0.13	0.18	0.21	0.38
	>2%	0.02	0.05	0.06	0.11	0.16	0.20	0.19	0.36

Fine sediment Surface fine sediment levels shall be developed by local field units for their area.

Interims for ERU 13 only: Mean surface fines (<6.0 mm) as measured in pool tails and low gradient riffles, are described in Overton et al. (1995):

Channel Type	Plutonic Geologic Type	Volcanic Geologic Type	Metamorphic Geologic Type
A	26	25	14
B	23	27	16
C	37	17	no data, development by local field units

* Note: The range of RMO values for the Eastside and UCRB EIS areas are displays of the 50th and 75th Percentile for natural and near natural stream data distribution. All values except pool width/mean maximum depth are normalized by stream width. Riparian Management Objectives values greater than or equal to the 50th percentile met the standard where ecologically attainable. Where values are not ecologically attainable, data and rationale to support this conclusion shall be documented. Riparian Management Objective values will be met as closely as is ecologically possible. To calculate large pools, pools, large wood, and single wood per mile from table values, use the following conversion: number per mile = (table value) x5280/average riffle width in feet.

[1] Data is not continuous over the entire project area particularly for ERUs 10, 11, and 12. Caution should be used when making interpretations from values in these areas. It also should be noted that most stream inventory data was collected from forested stream systems and may not be applicable to rangeland stream systems.

[2] The number of pool channel units with a maximum depth greater than 0.8 m (2.6 feet) and surface area greater than 20 m^2 (215 ft^2) per the reach mean riffle width.

[3] The number of pool channel units per reach mean riffle width.

[4] The number of single pieces of wood per reach mean riffle width, surveyed with the USFS Region 1/4 stream inventory protocol. Tallied wood includes pieces with diameters greater than 10 cm (4 inches) and lengths that exceed 3.0 m (9.8 ft) or two thirds the channel width. This value should only be used as a reference condition in forested landscapes in Idaho and western Montana.

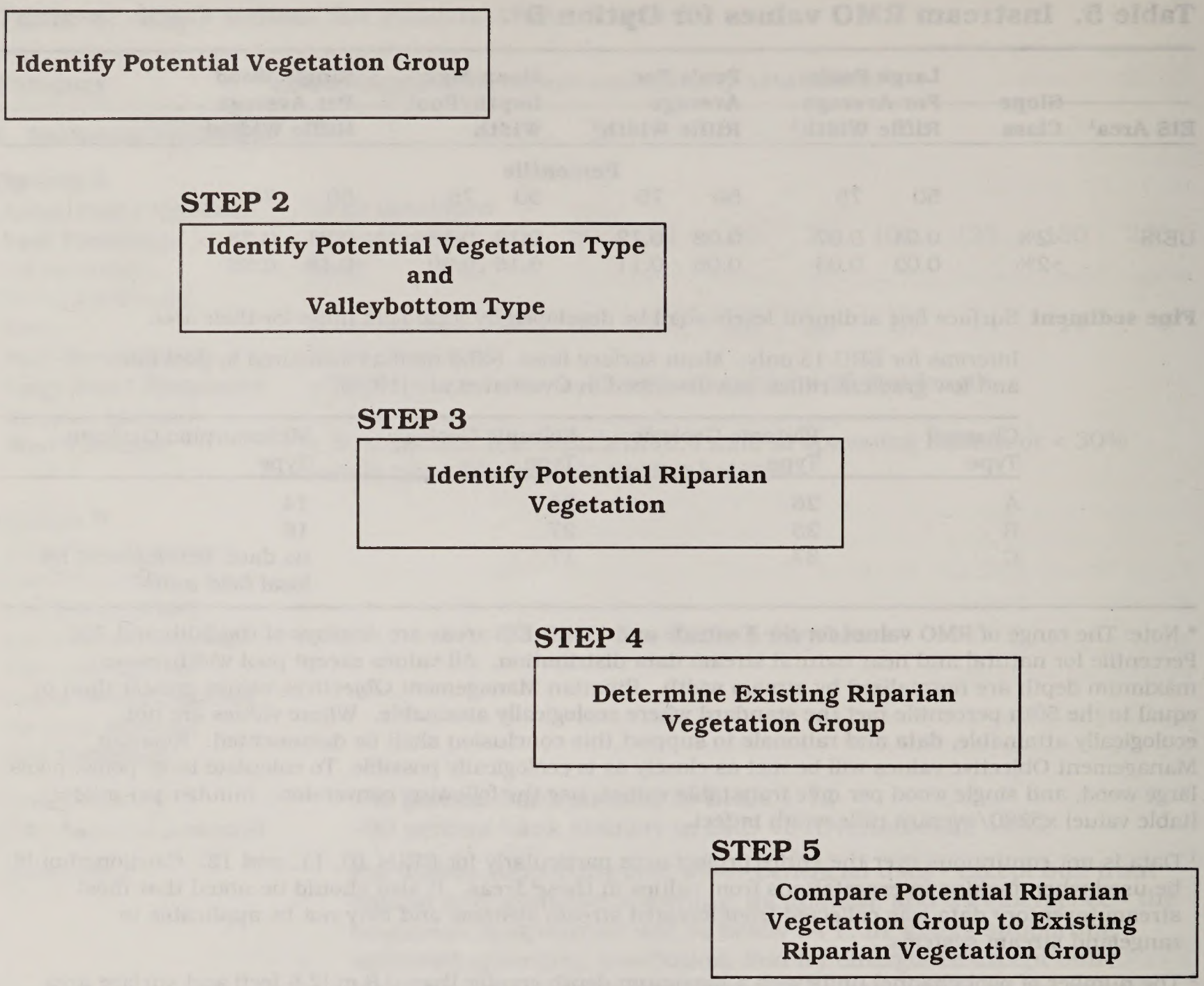


Figure 3. Stepwise Summary for Determining Riparian Vegetation RMOs.

Alternative 5

Timber Priority Areas Within Forested Environments

RMOs are defined not on the basis of instream standards but on the basis of key channel and habitat characteristics in the watershed of concern, and they are locally developed. These measures are then compared with those from streams of highly similar channel and watershed geomorphic character that are judged to fully support the waters beneficial uses, in order to produce reference conditions. Determination of "fully support" must include documentation of assumptions on which judgements are based, allowing for revision over time as new information becomes available. Benchmarks based on the reference conditions can then be established for instream characteristics and remeasured over time to evaluate change.

A benchmark-based system for developing RMOs can be summarized as follows:

a. Existing riparian conditions are measured and compared with reference conditions, where possible, to establish benchmarks.

b. Prescriptions (site-specific standards) are developed to ensure high levels of function even when the relationship of existing conditions to natural or reference conditions remains uncertain.

c. Monitoring is conducted in an adaptive management framework in order to answer four key questions: (1) Was the situation diagnosis correct? (2) Was the prescription correct? (3) Was the prescription implemented? (4) Was the prescription effective? See Appendix I for more detail.

In summary, RMOs relevant to each stream input process of concern are integrated into the analysis and subsequent management decision-making system.

Livestock Priority Areas Within Rangeland Environments

Riparian Management Objectives are to be based on the definition of Proper Functioning Condition as follows:

Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to:

- dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality;
- filter sediment, capture bedload, and aid floodplain development;
- improve flood-water retention and ground-water recharge;
- develop root masses that stabilize stream banks against cutting action;
- develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and
- support greater biodiversity.

Other Priority Areas

Riparian Management Objectives values as described for Alternatives 4 and 6 will apply to other priority areas.

Alternative 7

Riparian Management Objectives provide a measure of whether land management practices are providing watershed and habitat characteristics that will support aquatic species. If conditions at the watershed scale or site-specific scale are below these criteria, then it must be determined why the watershed is not meeting objectives. Where land management activities are the cause for not meeting riparian management objectives, strategies need to be implemented to restore watershed condition.

These RMOs are based in part on information from PACFISH, the NMFS PACFISH Biological Opinion (USDC 1995a) and the NMFS Land and Resource Management Plans Biological Opinion (USDC 1995b), Rhodes et al. (1994) and Peterson et al. (1992). These RMO values were based on the biological habitat requirements of fish and aquatic resources or based on conditions in undeveloped watersheds. The method of adjusting RMO values is through Ecosystem Analysis if it shows that habitat recovery is enhanced and not retarded. Below are RMOs for sediment delivery, fine sediment, and cobble embeddedness. In addition, modifications to PACFISH/INFISH RMOs are listed below for streambank stability and temperature. All other PACFISH/INFISH RMOs as described for Alternative 2 apply.

1. *Sediment Delivery Standard*: Reduce delivery of sediment to streams to no more than 20 percent over natural from all anthropogenic sources in watersheds containing current or

historical spawning or rearing habitat, unless it can be shown through Ecosystem Analysis based on peer reviewed science that stream habitat conditions can improve and that substrate and pool standards can be met with a different sediment standard.

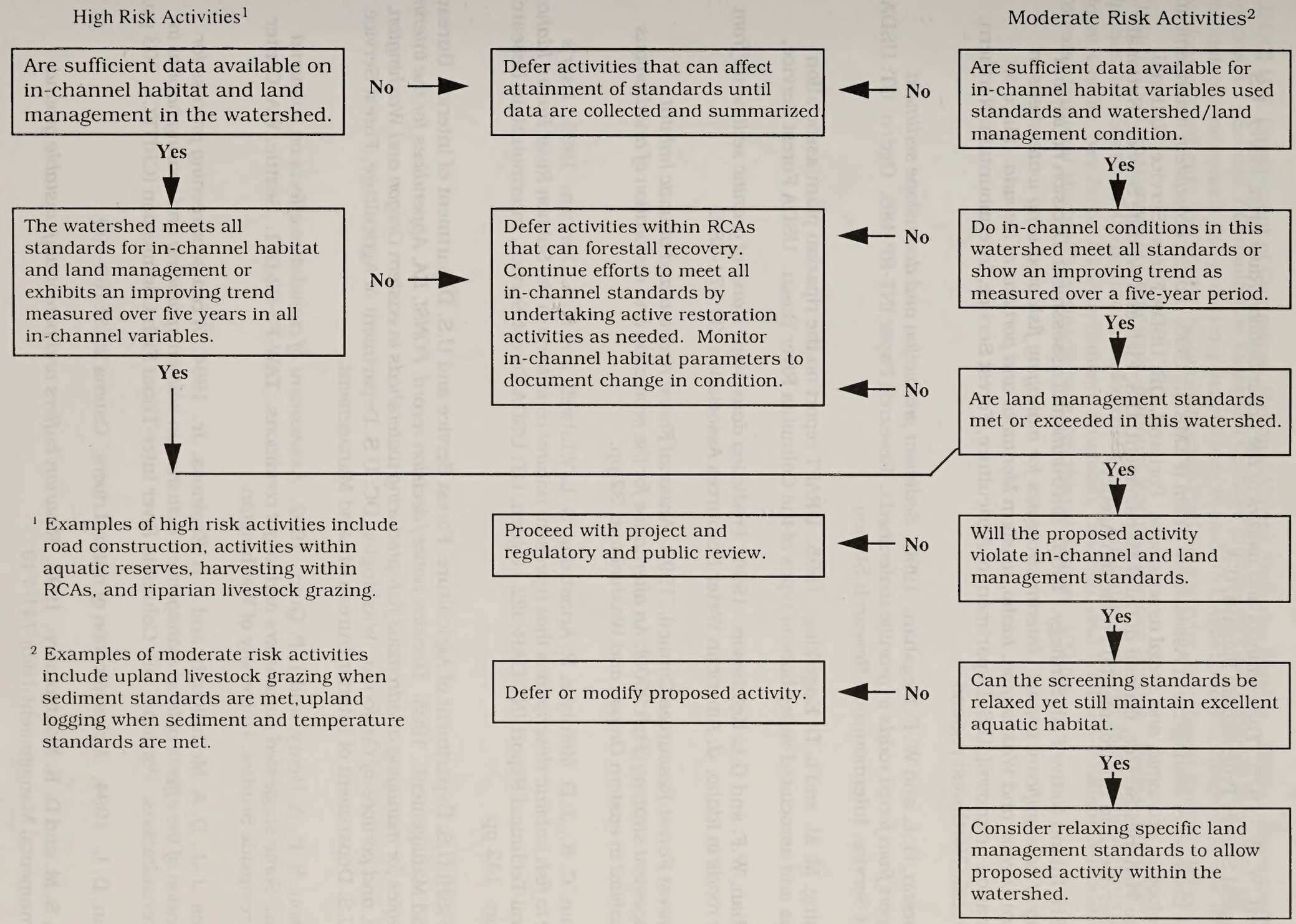
2. *Fine Sediment Standard*: Limit stream surface fine sediment (less than 6.4 mm in diameter) averages to less than 20 percent in spawning habitat.
3. *Cobble Embeddedness Standard*: Limit stream cobble embeddedness to less than 30 percent in rearing habitat.
4. *Bank Stability Standard*: Ninety percent of all stream banks should be in a stable condition.
5. *Water Temperature Standard*: For waters supporting cold water beneficial uses, except bull trout habitat and salmonid spawning, incubation, and fry emergence, the maximum temperature will be below 64^0 F. In waters supporting salmonid (except bull trout) spawning, incubation, and fry emergence, the maximum temperature will be below 55^0 F for the specific times of the year when these uses occur. In waters supporting bull trout habitat the maximum temperature will be below 50^0 F, except for those periods of spawning-to-fry emergence, when the maximum temperature will be below 48^0 F. All temperatures will be measured as a seven-day moving average of daily maximum temperature.

Coarse Screening Process

The coarse screening process will be used at a watershed scale (5th- to 6th-field HUC) to determine the consistency of activities with the goals of conserving and improving aquatic habitat. In some situations it may be desirable to apply the coarse screening process at smaller or larger scales because of habitat use or environmental conditions within the watershed. The screening process employs three sets of filters to assess the consistency of land management activities with conservation and improvement of aquatic habitat:

- in-channel criteria (surface fine sediment, cobble embeddedness, streambank stability, and temperature);
- land management criteria (sediment delivery, RCAs, timber harvest, grazing, roads, and aquatic reserves); and
- data availability.

Generally, activities should be considered to be consistent with the conservation and improvement of aquatic habitat when it complies with all aspects of the filters. Figure 4 represents a flow for the coarse screening process.



[1] Examples of high risk activities include road construction, activities within aquatic reserves, harvesting within RCAs, and riparian livestock grazing.

[2] Examples of moderate risk activities include upland livestock grazing when sediment standards are met,upland logging when sediment and temperature standards are met.

Figure 4. Coarse screening process for proposed activities (adapted from Rhodes et al. 1994)

Literature Cited

Emmett, W. W. 1975. *The channels and waters of the upper Salmon River area, Idaho.* US Geological Survey Professional Paper 870-A.

Forest Ecosystem Management Assessment Team (FEMAT). 1993. *Forest ecosystem management: An ecological, economic, and social assessment.* Portland, OR: USDA Forest Service, National Marine Fisheries Service, Bureau of Land Management, U.S. Fish and Wildlife Service, National Park Service, and Environmental Protection Agency.

(INFISH) Inland Native Fish Strategy. 1995. *Environmental assessment: Decision notice and finding of no significant impact. Interim strategies for managing fish-producing watersheds in eastern Oregon and Washington, Idaho, western Montana, and portions of Nevada.* [Place of publication unknown]: U.S. Department of Agriculture, Forest Service, Intermountain, Northern, and Pacific Northwest regions.

Ketcheson, G. L. and W. F. Megahan. 1996. *Sediment production and downslope sediment transport from forest roads in granitic watersheds.* Research Paper INT-RP-486. Ogden, UT: USDA Forest Service, Intermountain Research Station.

Manning, M. M. and L. D. Engelking. 1995. DRAFT report on the riparian plant association groups and associated valley bottom types of the Columbia River Basin. USDA Forest Service.

Megahan, W.F. and G.L. Ketcheson. 1996. *Predicting downslope travel of granitic sediments from forest roads in Idaho.* J. American Water Resources Association. 32:371-382.

Northwest Forest Resources Council. 1995. *National Forest riparian and aquatic habitat management strategy (Fish 2000): An alternative for the protection and restoration of anadromous fish habitat in eastern Oregon and Washington.* 32 pp.

Overton, C. K., J. D. McIntyre, R. Armstrong, S. L. Whitwell, and K. A. Duncan. 1995. *User's guide to fish habitat: descriptions that represent natural conditions in the Salmon River Basin, Idaho.* General Technical Report INT-GAR-322. Ogden, UT: USDA Forest Service, Intermountain Research Station. 142 pp.

(PACFISH) U.S. Department of Agriculture, Forest Service and U.S. Department of Interior, Bureau of Land Management. 1995. *Decision notice/decision record, FONSI, EA, Appendices for the interim strategies for managing anadromous fish-producing watersheds in eastern Oregon and Washington, Idaho, and portions of California.* Washington DC: U.S. Department of Agriculture, Forest Service and U.S. Department of Interior Bureau of Land Management.

Peterson, N. P., A. Henry, and T. P. Quin. 1992. *Assessment of cumulative effects on salmonid habitat: Some suggested parameters and target conditions.* TAW-F3-92-001. Seattle, WA: Center for Streamside Studies, University of Washington.

Rhodes, J. J., D. A. McCullough, and F. A. Espinosa, Jr. 1994. *A coarse screening process for evaluation of the effects of land management activities on salmon spawning and rearing habitat in ESA consultations.* Portland, OR: Columbia River Inter-Tribal Fish Commission (CRITFC). 203 pp.

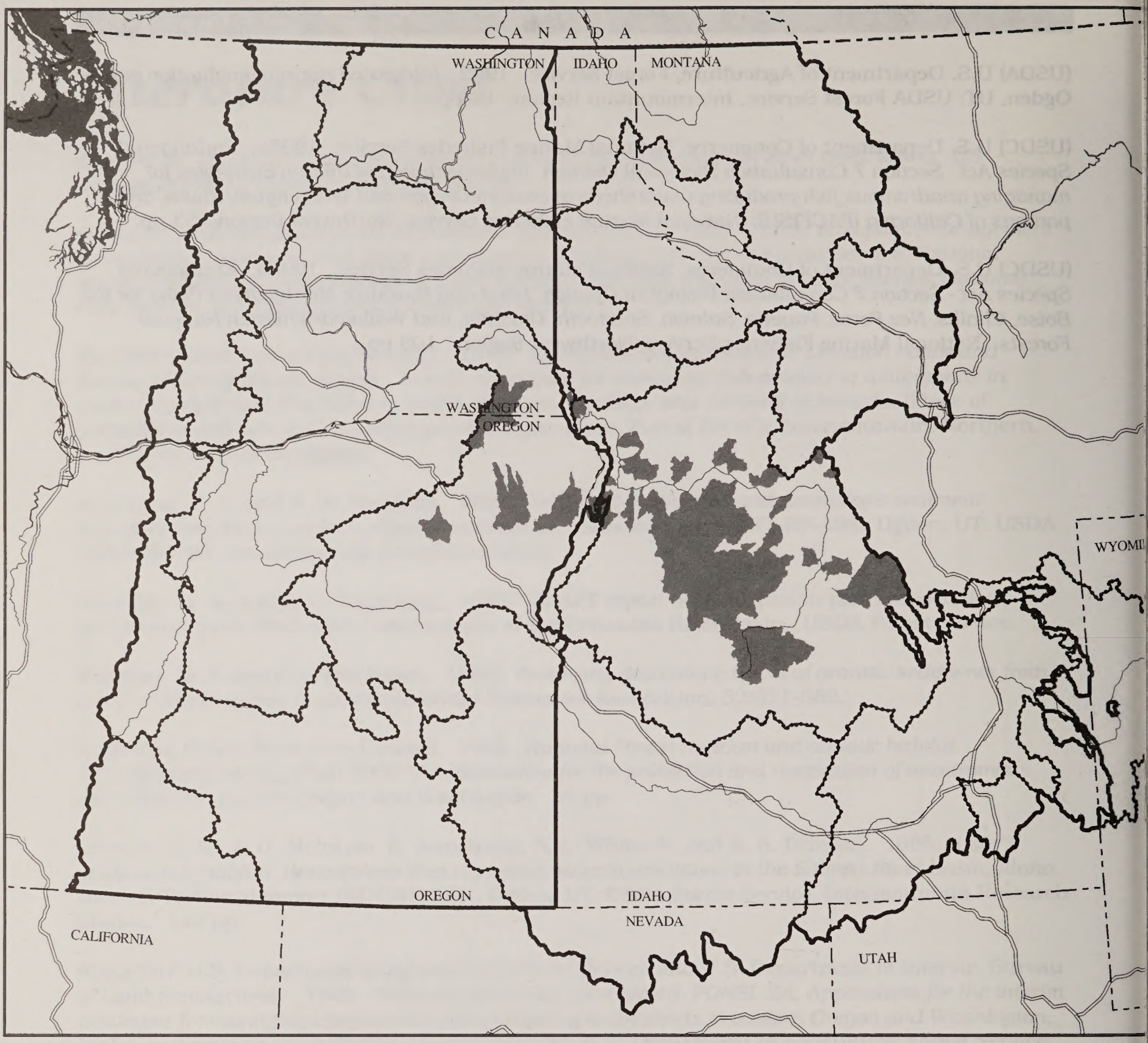
Rosgen, D. L. 1994. *A classification of natural rivers.* Catena 22(3):169-199.

Tang, S. M. and D. R. Montgomery. 1995. *Riparian buffers and potentially unstable ground.* Environmental Management 19(5):741-749.

(USDA) U.S. Department of Agriculture, Forest Service. 1992. *Integrated riparian evaluation guide.* Ogden, UT: USDA Forest Service, Intermountain Region. 60 pp.

(USDC) U.S. Department of Commerce, National Marine Fisheries Service. 1995a. *Endangered Species Act - Section 7 Consultation Biological Opinion: Implementation of Interim Strategies for managing anadromous fish-producing watersheds in eastern Oregon and Washington, Idaho, and portions of California (PACFISH).* National Marine Fisheries Service, Northwest Region. 53 pp.

(USDC) U.S. Department of Commerce, National Marine Fisheries Service. 1995b. *Endangered Species Act - Section 7 Consultation Biological Opinion; Land and Resource Management Plans for the Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Wallowa-Whitman National Forests.* National Marine Fisheries Service, Northwest Region. 103 pp.



Appendix G.
Snake River Salmon
High Priority Watersheds

BLM and Forest Service Administered Lands Only

INTERIOR COLUMBIA
BASIN ECOSYSTEM
MANAGEMENT PROJECT

Project Area
1996

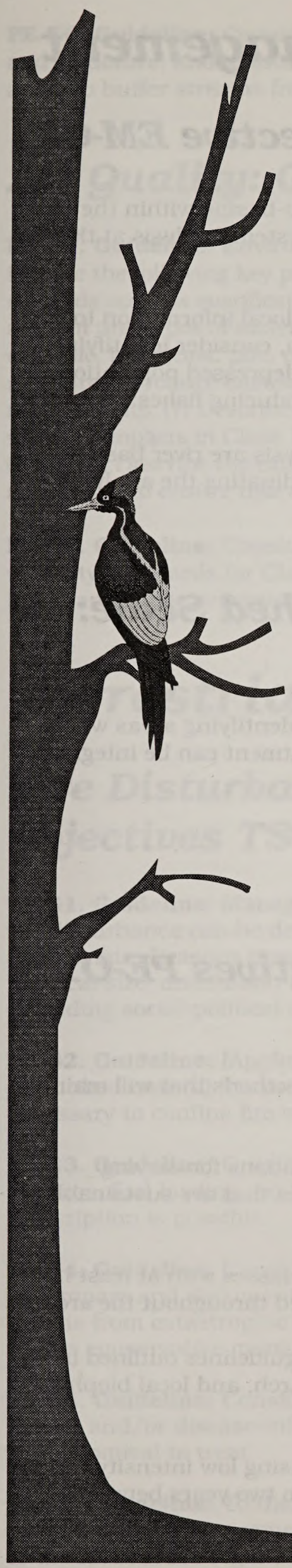
50 0 50 100 150 miles

50 0 50 100 150 km

N

High Priority Watershed
Major Streams
Major Roads
EIS Area Border
ERU Boundaries

**Ecological reporting unit names and numbers are found on Map 1-1.*



Appendix H Guidelines

(Eastside Appendix 3-2)

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Implementing Ecosystem Management

Sub-basin Reviews: Guidelines For Objective EM-O3

EM-G1. Guideline: Sub-basin analysis could assist in characterizing sub-basins within the context of the cluster and ERU, and set the context for first step in Ecosystem Analysis at the watershed scale.

EM-G2. Guideline: When conducting sub-basin reviews, consider using local information to verify strong population and sub-basin category designations. In addition, consider identifying and protecting or restoring at-risk fish population and habitats such as depressed populations in fringe distributions and watersheds that sustain wild and naturally reproducing fishes.

EM-G3. Guideline: The appropriate scales to be considered for this analysis are river basins (groups of 4th-field HUCs) or sub-basins (4th-field HUCs). Consider coordinating the analysis across Forest Service- or BLM-administrative boundaries.

Ecosystem Management at the Watershed Scale: Guidelines For Objective EM-O4

EM-G4. Guideline: As part of the ecosystem analysis process, consider identifying areas where fuels pose a risk to life and property, or natural resources, and their treatment can be integrated into ecosystem restoration plans.

Physical Environment

Soil Productivity: Guidelines For Objectives PE-O1 through PE-O4

PE-G1. Guideline: When conducting soil-disturbing activities, consider methods that will maintain long-term soil and vegetation productivity.

PE-G2. Guideline: Consider developing biomass distribution recommendations for varying vegetation types and geoclimatic environments to provide nutrient supplies that are sustainable spatially and temporally.

PE-G3. Guideline: Consider having coarse woody debris in variable size classes with at least half of the tonnage in 15-inch and greater diameter class, uniformly distributed throughout the area.

PE-G4. Guideline: Consider evaluating and updating the standards and guidelines outlined in the handbooks; update, where needed, based on soil monitoring, recent research, and local biophysical conditions.

PE-G5. Guideline: Consider decreasing nitrogen volatilization losses by using low intensity prescribed burning. Allow decomposition to occur for a minimum of one to two years between burns in moist, warm habitat types.

PE-G6. Guideline: Consider developing recommendations for vegetation densities, composition, and structure, and quantities of standing and downed moderate and large wood within riparian areas to buffer streams from pollutants and regulate nutrient availability and sustainability.

Air Quality: Guidelines For Objective PE-O5

PE-G7. Guideline: Environmental analysis performed for proposed prescribed fire activities can include the following key points: (1) Assess the need for burning compared to alternate fuel reduction methods such as scarification or piling and yarding unmerchantable material; (2) Quantify the amount and types of material and acreage to be burned; (3) Describe the type of burn proposed (for example, broadcast, pile, understory); (4) Quantify emissions of air pollutants; (5) Describe mitigation measures to reduce emissions; (6) Describe applicable regulatory, permit, and smoke management requirements; (7) Describe and quantify air quality impacts on downwind communities and discuss visibility impacts in Class 1 areas. This analysis could include modeling where appropriate models exists. (8) Describe the existing monitoring network. If needed, develop a plan to revise or expand monitoring to ensure that effects of prescribed burning on air quality are measured.

PE-G8. Guideline: Consider active participation with appropriate state agencies to develop visibility standards for Class 1 areas that consider the need to restore fire as a natural process in forest and range ecosystems.

Terrestrial Strategies

Fire Disturbance Processes: Guidelines For Objectives TS-O2 and TS-O3

TS-G1. Guideline: Management-ignited prescribed fire plans that restore the natural process of fire disturbance can be developed for Wilderness Areas where prescribed natural fire is not appropriate. Reasons prescribed fire may not be appropriate include: topographic features, physical size, orientation to the direction of fire spread, or a demonstrated risk of escape potential exceeding social-political considerations.

TS-G2. Guideline: (Applies to Alternative 7 only): Within reserves, consider using liberal prescribed natural fire prescriptions in order to allow nature to take its course, except where necessary to confine fire within reserve boundaries or where other resource objectives override.

TS-G3. Guideline: Outside reserves, fire prescriptions may be fairly conservative until vegetative mosaics, fuel loading, and continuity have been modified enough that a more liberal fire prescription is possible.

TS-G4. Guideline: Consider using scientific methods (such as computer or mathematical models) to compare and document relative risks among various management strategies aimed at reducing threats from catastrophic fire. Such tools may be used to compare the consequences of liberal versus conservative management actions.

TS-G5. Guideline: Consider prescribed natural fire as a means of managing extensive areas of insect- and/or disease-infested forests that have already lost their salvage value or are otherwise uneconomical to treat.

TS-G6. Guideline: To the extent that fuel amounts, arrangement, and management objectives allow, conduct management-ignited prescribed fire activities at frequencies and intensities similar to the natural fire regime appropriate to the site.

TS-G7. Guideline: As additional acres are restored to conditions that are more resilient to wildland fire, consider expanding those areas whose prescribed fire plans already include prescribed natural fire, and consider adding prescribed natural fire to other existing prescribed fire plans.

TS-G8. Guideline: Consider managing fuels around existing structures on Forest Service and BLM lands.

TS-G9. Guideline: When siting and constructing new federal facilities in wildland areas, give consideration to wildland fire; consider refurbishing old facilities with fire-resistant materials as maintenance is required.

TS-G10. Guideline: Consider conducting an inventory of public and privately owned structures on Forest Service- and BLM-administered lands and inholdings, and adjacent private lands in cooperation with owners, to determine which structures require protection from wildland fire. Agreements regarding appropriate levels of protection may be signed with property owners.

TS-G11. Guideline: Consider coordinating wildfire management planning with prescribed fire plans and activities to optimize the efforts of each fire management component.

TS-G12. Guideline: In dry forest types with a small potential shrub component, consider thinning of regeneration before the volume of thinning slash becomes a fire hazard. Additional treatment of thinning slash may be necessary.

TS-G13. Guideline: When restocking a forested site, consider the desired final stand density when determining planting densities.

TS-G14. Guideline: Consider landscape level treatments to create a network of areas with reduced crownfire potential.

TS-G15. Guideline: Consider removing ladder fuels and reducing stand density to a level at which a fire is unlikely to spread in the tree canopy.

TS-G16. Guideline: When managing vegetation to accommodate low intensity/high frequency fire regimes, consider establishing priorities for prescribed burning within three years. Place a high priority on areas of urban/wildland interfaces where issues of wildfire protection predominate.

TS-G17. Guideline: Consider identifying a combination of treatments that reduces risk of catastrophic wildfires while minimizing short- and long-term impacts to aquatic and riparian systems.

TS-G18. Guideline: Consider using thinning or other treatment methods rather than fire to increase structural diversity in mountain mahogany communities without changing overall distribution. This will create early and mid-seral stands and open shrub structure, which has declined.

TS-G19. Guideline: To control spread of wind erosion and annual exotics in areas of fine soils, consider minimizing the acres burned due to wildfire by using one or more of the following methods: (1) fuel breaks of less flammable vegetation; and (2) greenstripping, particularly near areas with a history of high levels of wildfire ignitions. During pre-suppression planning for fire suppression organization needs (that is, National Fire Management Analysis System (NFMAS)), consider these areas as high priority to minimize acreage burned and plan for suppression organizations to make this successful.

TS-G20. Guideline: Consider developing spring burning prescriptions to reduce exotic or annual species during their critical growth stage, and to help prepare sites for rehabilitation with native or desirable exotic plants.

TS-G21. Guideline: Consider developing pre-suppression fire plans to reduce the amount of cheatgrass dominated sites burned by wildfire.

TS-G22. Guideline: Consider conducting assessments of potential postfire resprouting, reseeding, and survival of native shrubs, grasses, and forbs in order to determine if postfire seeding is necessary.

TS-G23. Guideline: Consider leaving residual patches of untreated shrubs to provide a seed source for establishment of a young shrub stand.

TS-G24. Guideline: Consider the effects of prescribed burning on habitat patch size and fragmentation.

Noxious Weeds: Guidelines for Objectives TS-O4 and TS-O5

TS-G25. Guideline: Consider the effectiveness of control efforts (physical, biological, pesticides) to determine the best method for control of noxious weeds while maintaining ecosystem values. Where feasible and practicable, consider using non-chemical type control efforts such as hand pulling, biological control, and seeding.

TS-G26. Guideline: Consider implementing local weed control educational and coordination efforts with all interested regional, state, and local entities including private landowners, schools, road crews, public land users, and suppliers of sand, gravel, hay, seed, and nurseries.

TS-G27. Guideline: Consider quarantine or closure of some areas to control the spread of noxious weeds to adjacent areas.

TS-G28. Guideline: Where possible, consider prioritizing weed management as follows:

- ◆Prevent invasion of new invaders by limiting weed seed dispersal, minimizing soil disturbance, and properly managing desirable vegetation.
- ◆Detect and eradicate new invaders
- ◆Target roadways, water courses, along trails and railways, and in campgrounds for a constant prevention and containment program.
- ◆Emphasize control of large-scale infestations (limiting the spread of noxious weeds and reducing the infestation level): Focus initial efforts on small, manageable units with an understory of residual plants, and then focus on the remaining infestation. Start with the outside and work toward the center of the infestation.
- ◆Consider using native, locally adapted species for rehabilitating weed infested lands and bare ground.

TS-G29. Guideline: (Applies to Alternative 6 only): Consider establishing experimental areas to test methods of weed control, such as biological, mechanical, and chemical means.

TS-G30. Guideline: Consider targeting noxious weeds that are particularly problematic in Range Cluster 2, and noxious weeds that are relatively new invaders to the planning area and could be problematic in the future, including but not limited to the following: diffuse knapweed, whitetop, Scotch thistle, and yellow starthistle.

TS-G31. Guideline: Consider targeting noxious weeds that are particularly problematic in Range Cluster 3, and noxious weeds that are relatively new invaders to the planning area and could be problematic in the future, including but not limited to the following: diffuse knapweed, orange and yellow hawkweeds, yellow starthistle, medusahead, whitetop, and Scotch thistle.

TS-G32. Guideline: Consider targeting noxious weeds that are particularly problematic in Range Clusters 1, 3, 4, 5, and 6, and noxious weeds that are relatively new invaders to the planning area

and could be problematic in the future, including but not limited to the following: diffuse knapweed, medusahead, yellow starthistle, rush skeletonweed, Mediterranean sage, orange and yellow hawkweed, whitetop, and Scotch thistle.

TS-G33. Guideline: Consider targeting noxious weeds that are particularly problematic in Range Clusters 1, 4, and 6, and noxious weeds that are relatively new invaders to the planning area and could be problematic in the future, including but not limited to the following: diffuse knapweed, medusahead, yellow starthistle, rush skeletonweed, and Mediterranean sage.

TS-G34. Guideline: Consider targeting noxious weeds that are particularly problematic in Range Cluster 5, and noxious weeds that are relatively new invaders to the planning area and could be problematic in the future, including but not limited to the following: diffuse knapweed, yellow starthistle, medusahead, and halogeton.

TS-G35. Guideline: Consider targeting noxious weeds that are particularly problematic in Range Clusters 2 and 4, and noxious weeds that are relatively new invaders to the planning area and could be problematic in the future, including but not limited to the following: diffuse knapweed, whitetop, Scotch thistle, and yellow starthistle.

TS-G36. Guideline: Consider targeting noxious weeds that are particularly problematic in Range Clusters 2, 3, and 5, and noxious weeds that are relatively new invaders to the planning area and could be problematic in the future, including but not limited to the following: diffuse knapweed, whitetop, Scotch thistle, yellow starthistle, medusahead, halogeton, and orange and yellow hawkweed.

TS-G37. Guideline: Consider targeting noxious weeds that are particularly problematic in Range Clusters 1 and 6, and noxious weeds that are relatively new invaders to the planning area and could be problematic in the future, including but not limited to the following: diffuse knapweed, medusahead, yellow starthistle, rush skeletonweed, and Mediterranean sage.

TS-G38. Guideline: Consider targeting noxious weeds that are particularly problematic in Range Clusters 1 through 6, and noxious weeds that are relatively new invaders to the planning area and could be problematic in the future, including but not limited to the following: diffuse knapweed, whitetop, Scotch thistle, yellow starthistle, orange and yellow hawkweeds, medusahead, halogeton, rush skeletonweed, and Mediterranean sage.

TS-G39. Guideline: Consider preventing the spread of noxious weeds into areas that are susceptible to invasion. Areas that are susceptible to invasion include roadways, railways, waterways, and other high disturbance areas, and rangeland vegetation cover types that are of high or moderate susceptibility to invasion. See Appendix F for a table that portrays the rangeland cover types in the project area and their susceptibility to invasion by noxious weeds.

TS-G40. Guideline: Consider developing an inventory system for noxious weeds that will result in accumulation of information on the following items: (1) locations of infestations; (2) acreage infested; (3) number or density of plants; (4) general plant community infested; (5) environmental conditions, such as soil conditions and level of disturbance; and (6) current land use activities.

TS-G41. Guideline: Consider automated data bases for the storage and retrieval of information on noxious weeds. Ensure that these data bases are integrated with Geographic Information Systems.

TS-G42. Guideline: Consider developing education and awareness programs that permit visitors and users of federal lands to assist federal land managers in locating noxious weed invaders and preventing noxious weed invasions.

TS-G43. Guideline: Consider developing and enforcing policies designed to ensure seed and seed mixtures, hays, grains, and straws are free of noxious weed seed.

TS-G44. Guideline: Consider developing cooperative weed prevention programs with suppliers of sand, gravel, top soil, seed, hay, straw, ornamental plants, and any other materials that may transport seed and other reproductive plant parts of noxious weeds.

TS-G45. Guideline: Consider training federal agency employees at all levels. Training would be focused on the following topics: identification of noxious weeds currently present and potentially invasive to the area; noxious weed dispersal agents; vegetation communities in the area and their susceptibilities to various noxious weeds (see Appendix F for a table that shows rangeland vegetation types in the project area and their susceptibilities to invasion by selected noxious weeds); actions to take when new infestations are encountered; and actions that employees can take to prevent the spread of noxious weeds.

TS-G46. Guideline: Consider developing control strategies targeted and tailored to specific noxious weeds. Consider combining cultural, physical, biological, and chemical methods into a control strategy. See Appendix F for a more detailed list of cultural, physical, biological, and chemical control guidelines.

TS-G47. Guideline: Consider noxious weed management in planning documents.

TS-G48. Guideline: To prevent spread of weeds along roads, consider weed risk factors - such as presence of weeds, vegetation community type, aspect, and shading - in the planning associated with road location and design.

TS-G49. Guideline: To prevent spread of weeds along roads by vehicles, consider the following: (a) Before construction equipment moves into a relatively weed-free area at moderate or high susceptibility to invasion, mow, grade, or otherwise treat all seed-bearing noxious weed plants on the travelway of existing roads. Treated areas should then be reseeded. (b) Clean off-road equipment of all soil and plant parts, using power or high-pressure cleaning, before moving the equipment into relatively weed-free areas that are at moderate to high susceptibility to invasion.

TS-G50. Guideline: Because weeds are not adapted well to shade, consider retaining shade along roads by minimizing removal of trees and other roadside vegetation during construction, reconstruction, and maintenance, particularly on south aspects.

TS-G51. Guideline: To prevent spread of weeds along roads, consider reestablishing vegetation on all bare ground. For all construction, reconstruction, and maintenance activities, seed all disturbed soil (except the traveled portion) within seven days of work completion at each site, unless ongoing disturbance at the site will prevent weed establishment. In that case, seeding should be performed within seven days of final disturbance. Use a seed mix that includes fast, early growing species to provide quick, dense revegetation. Seed should be certified weed-free before purchase to ensure minimum weed content. Consider these options: (a) fertilizing at the same time as seed application and again later; (b) applying weed-free mulch with seeding; and (c) double-seeding, full rate at initial ground disturbance and full-rate again at the end of the project.

TS-G52. Guideline: To minimize weed spread caused by moving infested gravel and fill material to relatively weed-free locations, consider using gravel and fill that comes from weed-free sources, especially where this gravel and fill is to be placed in relatively weed-free areas that are at moderate to high susceptibility to invasion. Inspect gravel pits and fill sources to identify weed-free sources.

TS-G53. Guideline: To minimize sources of weed seed in areas not yet revegetated, consider closing active road construction sites to vehicles that are not involved with construction, where the construction sites are located in relatively weed-free areas that are at moderate to high susceptibility to invasion.

TS-G54. Guideline: To minimize roadside sources of weed seed that could be transported to other areas, consider monitoring for noxious weeds in road maintenance programs. Weed infestations

should be inventoried and scheduled for treatment. Where applicable, consider developing timber sale clauses and specifications to collect deposits for use in weed-control road maintenance.

TS-G55. Guideline: Consider weed risk and spread factors in road closure decision-making. The decisions made in regard to selection of roads for closure should include these factors: length of time it takes for native vegetation to reestablish, vicinity of seed source, the likelihood that the roads will spread weeds.

TS-G56. Guideline: To minimize transport of weed seed by pack and saddle stock: (a) require that all pack and saddle stock in designated areas use only certified weed-free feed and straw bedding. Where applicable in wilderness, this technique should be deferred to the Limits of Acceptable Change planning process. Encourage the use of weed-free feed in all areas. Visitors to National Forest lands are now required to use certified noxious-weed-free hay, straw, or mulch in Idaho and Montana]; (b) consider requiring pack and saddle stock to be quarantined and fed only weed-free feed for 24 hours before traveling off roads. Before quarantine, tail and mane should be brushed out to remove any weed seed.

TS-G57. Guideline: To encourage a weed-free trail user's ethic, consider placing signs at trailheads that include information on weed prevention techniques and weed awareness.

TS-G58. Guideline: Consider requesting hikers, campers, and other recreationists who are recreating in weed-infested areas to brush and clean themselves and their equipment before they move to weed-free areas.

TS-G59. Guideline: To ensure that all bare ground is covered by desirable vegetation that will help prevent weed establishment, consider seeding archeological site excavations.

TS-G60. Guideline: To incorporate weed prevention into design of wildlife habitat improvement projects, consider weed risks in environmental analysis for habitat improvement projects (such as prescribed fire).

TS-G61. Guideline: To minimize the creation of bare soil and other factors that enhance weeds, (a) consider management that prevents excessive soil disturbance at salt licks, watering sites, and at sites characterized by sensitive soil conditions; and (b) consider placing salt in containers and moving salt periodically.

TS-G62. Guideline: To minimize transport of weed seed to relatively weed-free areas that are at moderate to high susceptibility of invasion, consider controlling the timing of livestock movement from infested to noninfested areas, especially in range allotments that have both weed-infested and relatively weed-free areas that are at moderate to high susceptibility of invasion. Consider permitting livestock to graze weed-infested areas only when weeds are not flowering or producing seeds, or, if livestock are grazing weed-infested areas, consider moving them to a holding area for about 14 days before moving them to weed-free areas.

TS-G63. Guideline: To ensure that fire suppression and rehabilitation efforts minimize weed spread, consider reseeding all disturbed soil in relatively weed-free areas that are at moderate to high susceptibility of invasion.

TS-G64. Guideline: Consider contract clauses that ensure that only tested and certified noxious-weed-free mixtures are used to revegetate and reclaim disturbed sites.

TS-G65. Guideline: To ensure establishment and maintenance of vigorous, desirable vegetation that discourages weeds, consider monitoring all seeded sites. Fertilize and spot reseed as needed. Preference for seeding should be given to native, "pioneer" (early seral) species that are typically low in nutrient demands. This minimizes the need for fertilization. Road maintenance programs should include scheduled fertilization where needed (three-year period is suggested).

TS-G66. Guideline: To ensure success of revegetation efforts that will minimize weed spread, consider permitting livestock grazing of reseeded sites after vegetation is well established.

Forested Lands

Dry Forest (only): Guidelines For Objective TS-O6

TS-G67. Guideline: Where possible, consider converting late-seral multi-layered forested ecosystems to single-layered systems dominated by shade-intolerant tree species to move toward desired single-layered and multi-layered late-seral structural conditions consistent with biophysical environments and disturbance regimes. It may be necessary to change existing standards for big game cover.

TS-G68. Guideline: To promote development of late-seral single layer ponderosa pine, consider using thinning, harvesting, and/or prescribed fire on existing mid-seral forest structural stages. Stand structural condition, composition, stand density, fuel loading and arrangement, and litter and duff depth may be matched to the desired fire regime. The success of sustaining shade-intolerant tree species will depend on recurring disturbance. Ecosystem Analysis can be used to determine structures appropriate for local predicted fire regimes.

Moist Forest (only): Guidelines For Objective TS-O8

TS-G69. Guideline: Consider accelerating development of up to 20 percent canopy cover of residual large trees of western larch and ponderosa pine.

TS-G70. Guideline: For fire-adapted species such as western white pine, western larch, or lodgepole pine, consider using thinning, harvesting, and/or prescribed fire to maintain stand densities that mimic those following stand-replacing fire under desired future fire regimes and to maintain these species as the dominant overstory consistent with biophysical environments.

TS-G71. Guideline: To restore dominance of western white pine where fire regimes would have encouraged their dominance, or to increase the overall abundance, diversity, and distribution of western white pine, consider a variety of techniques such as:

- selecting and testing new candidate rust-resistant trees, and judiciously using lower levels of rust-resistance;
- reducing mortality of infected pine through intermediate treatments such as pruning and canker excision;
- minimizing selection pressure on the fungus by conservative use of highly rust-resistant pine stock;
- monitoring for new races of rust;
- reducing competition and promoting more open stands which are less conducive to rust and spread; and
- protecting existing stands.

TS-G72. Guideline: To restore diversity of size and age structures in lodgepole pine and reduce susceptibility to mountain pine beetle infestation, consider using thinning, harvesting, and/or prescribed fire to maintain appropriate stand densities.

TS-G73. Guideline: Consider using non-surface-disturbing treatments (for example, minimize mechanical treatments) to minimize the incidence of root rot on sites where soils are highly disturbed.

TS-G74. Guideline: Consider removing ladder fuels and reducing stand density to a level at which a fire cannot spread in the tree canopy on sites dominated by ponderosa pine, Douglas-fir, and/or western larch, consistent with biophysical environments.

TS-G75. Guideline: In Forest Cluster 4, consider increasing the amount of secure habitat that is presently available by increasing the amount of small openings, canopy gaps, or open forests where possible. ***Rationale:*** *The extensive road access in Forest Cluster 4 has reduced the amount of secure habitat available. The homogenization of forest structures has negatively affected suitable habitat for species requiring small openings, canopy gaps, or open forests. Homogenization has also negatively affected the persistence of terrestrial vertebrates which rely heavily on late and early seral structures.*

TS-G76. Guideline: Consider improving levels of connectivity with habitats in Canada to allow emigration of large forest carnivores to habitats in the United States.

Cold Forest (only): Guidelines For Objective TS-O10

TS-G77. Guideline: Consider using low intensity prescribed fires every 25 to 50 years, or at an interval considered appropriate for local conditions, to reduce fuel accumulations and understory density.

TS-G78. Guideline: To reduce Douglas-fir susceptibility to dwarf mistletoe and western spruce budworm, consider minimizing canopy layers and reducing density through thinning, harvesting, and/or prescribed fire on existing stands in mid-seral forest structural stages. Maintain appropriate stand densities (for example, 80 to 120 square feet of basal area), and use low to moderate severity prescribed fires when needed to reduce fuel accumulations and understory density.

TS-G79. Guideline: To allow regeneration of early successional lodgepole pine and aspen, consider using thinning, harvesting, and/or prescribed fire to reduce Engelmann spruce and subalpine fir. Move these, as well as lodgepole pine and aspen types, toward desired ranges of future conditions consistent with biophysical environments. Increase the amount of aspen to levels that would have been maintained under the desired fire regimes. This may include the necessity to protect aspen regeneration from ungulate grazing.

TS-G80. Guideline: Consider restoring seral stages dominated by aspen on sites where aspen is currently being replaced by conifers, or where stem exclusion/closed canopy stages are declining in health.

TS-G81. Guideline: Consider the following techniques to re-establish whitebark pine and subalpine larch to desired ranges of abundance and distribution:

- collecting seed from blister rust-resistant stock, and either sowing seeds or planting seedings;
- making grafts of resistant phenotypes and plants;
- cross-breeding several blister rust-resistant trees;
- artificially inoculating seedlings from rust-resistant or cross-bred stock;
- increasing effectiveness of pruning and excising cankers in areas with moderate hazard;
- monitoring for new races of blister rust;
- reducing competition;
- protecting existing stands.

TS-G82. Guideline: Consider allowing fire to remove shade-tolerant species and restore forest structure in higher elevations where there is low economic value or ecological risk.

Dry and Moist Forest: Guidelines For Objectives TS-O6 And TS-O8

TS-G83. Guideline: Consider reducing density of Douglas-fir and grand fir in mixed conifer stands, to reduce the susceptibility of the forest to spruce budworm and tussock moth. Ponderosa pine and western larch may be retained in the overstory.

TS-G84. Guideline: Use a combination of harvesting, mechanical treatments, and/or prescribed fire to modify forest composition to dominance by shade-intolerant species (such as ponderosa pine, western larch, Douglas-fir).

TS-G85. Guideline: To reduce density of overstocked, multi-story stands of shade-tolerant species, consider using thinning from below and overstory thinning, harvesting, and/or prescribed fire on existing stands in regeneration and young forest structural stages to reduce the amount of multi-story stands and approach the desired range of future conditions.

TS-G86. Guideline: Within Forest Cluster 3, consider conducting Ecosystem Analysis at the watershed scale to resolve potential conflicts between the conservation of terrestrial and aquatic species and habitats and the restoration of forest structure. ***Rationale:*** *Sub-basins in Forest Cluster 3 represent only a moderate opportunity for ecosystem restoration. There is potential conflict between forest and aquatic management because of fewer opportunities for simultaneous restorations with little risk to existing resources.*

Dry, Moist, and Cold Forest: Guidelines For Objectives TS-O6, TS-O8, and TS-O10

Composition, Structure

TS-G87. Guideline: Consider using vegetation management to restore late-seral structure and reduce area in mid-seral structure, where these seral stags are outside the desired range of conditions.

TS-G88. Guideline: Consider fragmenting large patches of shade-tolerant species where they are found to be outside the desired range of future conditions. Break up their continuity and decrease horizontal landscape homogeneity, consistent with biophysical environments and natural disturbance regimes.

TS-G89. Guideline: Consider matching patch sizes to local predicted disturbance regimes.

TS-G90. Guideline: Consider a variety of conditions, seral stages, and distribution of large trees across the landscape. For example, maintain large trees in clumps or islands with intact litter and downed wood components, as well as scattered single trees.

TS-G91. Guideline: Consider using fire, cutting, or browsing to manage woody vegetation while maintaining the integrity of meadow soils and native vegetation.

TS-G92. Guideline: Consider maintaining or restoring late-seral structure in large blocks of habitat that are representative of the likely pattern that occurred with historical disturbance events.

TS-G93. Guideline: On actively managed forested sites, consider leaving a characteristic representation of all size classes of woody material through time. In addition, standing dead trees may be left as a future debris source, in order to maintain site productivity and wildlife habitat.

TS-G94. Guideline: Consider using watershed restoration needs and existing roads to determine restoration and production activity locations and frequencies. ***Rationale:*** *The greatest need for forest restoration is in watersheds with existing road networks.*

TS-G95. Guideline: Consider minimizing disturbance effects from multiple entries over a narrow period of time. Treatments may be complete enough in the first entry to allow future treatments to be accomplished from a reduced access system.

Prescribed Fire

TS-G96. Guideline: Fire behavior, fuel loading, duff composition, and tree mortality models can be used to determine where desired stand conditions can be attained with one or a series of prescribed fire treatments, or where stand conditions or other hazards require mechanical thinning prior to prescribed fire treatment.

TS-G97. Guideline: Prescribed fire may be a preferred restoration method. Where necessary, use thinning and/or mechanical fuel reduction in combination with prescribed fire.

TS-G98. Guideline: Consider both managed and natural prescribed fire as restoration tools. Prescribed natural fire can be a more important tool after the forests within a watershed have been restored to a fire-resistant condition, or are desired to be in a severe fire regime.

Snags and Downed Wood

TS-G99. Guideline: When conducting snag recruitment analysis, consider local disturbance regimes to account for replacement trees and associated species needs. Consider providing snag and downed log habitats by: slope, aspect, elevation, clumps, groups, decay class, and tree species.

TS-G100. Guideline: Consider providing a variety (clumps/groups, size classes, decay classes, tree species) and distribution of snags and downed logs across the landscape, taking into account the limits of biophysical environments.

TS-G101. Guideline: Select snags in areas with a high probability of retention success. Consider elevation, aspect, road density, distance to roads, landings, harvest or burn unit boundaries, drainage pattern, slope, distribution, and wind-throw hazard. Protect some green trees, to the extent possible, in prescribed burning units and other treatment areas for long-term recruitment of snags. Monitor snag attrition and adjust strategies to meet objectives.

TS-G102. Guideline: Consider retaining snags in clumps with their associated understory vegetation intact. Also retain scattered individual snags that are well-distributed across the landscape, to meet the needs of snag-dependent wildlife species and to reduce vulnerability to snag loss.

TS-G103. Guideline: Consider leaving extra trees on site for future snag recruitment.

TS-G104. Guideline: Where appropriate consider creating snags in areas currently or projected to be deficient in snag numbers.

TS-G105. Guideline: Consider developing firewood policies that are in concert with snag retention and recruitment objectives. Consider limiting firewood cutting to trees less than 15 inches in diameter at breast height (DBH) and within 200 feet of a road. Ensure that firewood sales are designed and implemented with snag retention objectives in mind.

TS-G106. Guideline: In areas where additional snags and downed logs are desired. consider protecting existing material during prescribed burning by igniting when moisture content of coarse woody debris and duff are high. or by preventing their ignition through choice of lighting techniques or use of fire retardants such as foam.

Terrestrial Species Habitats

TS-G107. Guideline: Consider using various methods (such as providing patches of denser second growth or closing roads) to replace big game security habitat that may be reduced in the process of returning some stands to single-layer structure.

TS-G108. Guideline: Consider maintaining woody riparian vegetation, consistent with desired fire regimes, where it is within desired ranges of future conditions, to provide linkage between habitat types and elevational zones. Woody riparian vegetation may be restored where needed.

TS-G109. Guideline: Consider restoring or maintaining vegetation on ridgetops to provide movement and linkage between habitat areas. Consider maintaining canopy closure at greater than or equal to 40 percent, or within the upper 66 percent of site capability. Consider reducing open road density and minimizing roads on ridgetops.

TS-G110. Guideline: Consider implementing seasonal and timing restrictions and closures of appropriate winter recreation activities to meet species requirements that would increase species viability and long-term persistence.

TS-G111. Guideline: Consider reducing fragmentation resulting from many small management activities. Restore patch sizes and distribution closer to those found under historical disturbance events.

TS-G112. Guideline: In Forest Clusters 1 and 2, consider using conservation measures to maintain or establish large blocks of important habitat that are at risk for aquatic or terrestrial species outside of wilderness or unroaded areas.

TS-G113. Guideline: In Forest Cluster 4, consider protecting raptor nest sites that are currently being used or have been used in the past five years, as well as important roost trees and associated habitat in the area surrounding the nest trees by at least 500 feet (750 feet for goshawks) unless it can be shown that local species needs or conditions differ.

TS-G114. Guideline: In Forest Cluster 4, consider managing an area up to a one-half mile radius around each active raptor nest site for feeding and fledgling activity. Habitat effectiveness for the specific raptor species can be retained within the area, and disturbances (such as from road construction, timber harvest, prescribed burning) can be avoided from March 1 through August 31 when nests are occupied, or as adapted to local conditions and species.

Insects and Disease

TS-G115. Guideline: Consider using thinning, harvesting, and/or prescribed fire to prevent beetle epidemics by controlling stand density.

TS-G116. Guideline: Consider using prevention techniques such as selective cutting, thinning dense 70- to 80-year-old stands, and minimizing soil compaction and disturbance during stand treatment, to reduce susceptibility of ponderosa pine to western pine beetle by maintaining vigorously growing trees.

TS-G117. Guideline: After harvest, consider using prescribed broadcast burns and/or thinning in stands that have been severely infected by dwarf mistletoe.

TS-G118. Guideline: Where true firs are infected, consider managing to reduce susceptibility of stands to annosus root disease by: lowering the number of entries into any given stand, shortening rotations, decrease wounding during harvesting, or manipulating species mixtures by changing to pine, larch, or Douglas-fir.

TS-G119. Guideline: Consider managing to reduce the susceptibility of stands to laminated root rot by: avoiding shelterwood cuts which favor regeneration of susceptible shade-tolerant species, or switching to species more resistant to root rot such as western red cedar, pines, and larch, where appropriate.

TS-G120. Guideline: Consider managing to reduce the susceptibility to Armillaria root disease by: using thinning, harvesting, and/or prescribed fire to increase vigor; pre-commercial thinning sites of moderately low productivity that are infected; or planting tolerant species such as larch, hemlock, pine, and hardwoods in existing infected areas. Minimize subsequent stand entry in moist forest PVGs.

TS-G121. Guideline: Consider removing root-disease-infected stumps after thinning or harvest to prevent the infection of future stands on highly productive sites. Minimize soil damage and reforest with early-successional species most likely to tolerate the pathogen and soil damage.

Post-fire, Post-harvest

TS-G122. Guideline: During fire salvage, consider leaving unharvested areas within each of the community types present.

TS-G123. Guideline: Consider retaining standing hollow, or otherwise damaged, trees when they don't pose a safety hazard.

TS-G124. Guideline: Whole tree harvesting is not recommended in areas that need additional coarse downed wood for wildlife or soil productivity concerns.

TS-G125. Guideline: Whenever possible, avoid tractor piling slash, and select burning techniques that burn woody material in place.

Aquatic, Riparian Considerations

TS-G126. Guideline: Consider treatment of uplands to mitigate risks to aquatic/riparian ecosystems in conjunction with considerations of treatments to riparian areas.

TS-G127. Guideline: Consider the spatial and temporal role of natural disturbances within uplands and riparian areas in creating and maintaining high integrity aquatic habitat. Consider conducting prescribed burns to shield aquatic habitat from severe disturbance.

TS-G128. Guideline: Consider vegetation management practices that restore and are compatible with the spatial and temporal disturbance processes and patterns that encourage attainment of riparian management objectives, and in a manner that benefits native aquatic species.

Roads

TS-G129. Guideline: Consider using thinning, harvesting, and/or prescribed fire to manage fuels in unroaded areas where there is a high risk to ecosystem values, without construction of new roads.

TS-G130. Guideline: Consider developing road management and access management plans with other agencies when necessary to assist meeting wildlife management agencies' objectives.

Rangelands

*(For Alternative 7, guidelines apply **outside reserves** unless otherwise indicated)*

Rangeland Health: Guidelines For Objectives TS-O12 through TS-O16

TS-G131. Guideline: Consider locating water developments, salts, and supplements to improve distribution of livestock away from wetlands, riparian areas, and other sensitive areas such as steep slopes or highly erosive soils.

TS-G132. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): Consider developing livestock waters, seedings, and other projects that concentrate livestock use, in areas (1) that do not conflict with wintering wildlife, and (2) that will not be opening up new ground for livestock grazing that has not been used by livestock in the past.

TS-G133. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): Prior to making adjustments to livestock use as a result of conflicts with big game species, consider determining whether:

- ◆There is dietary overlap.
- ◆They are using the same areas.
- ◆The area is in good or degraded range condition.
- ◆The use is seasonally different.
- ◆The livestock use is conditioning the forage for big game.
- ◆The big game population is decreasing.
- ◆The area is winter range.
- ◆The area provides important fawning, calving, or lambing areas.

TS-G134. Guideline: Consider the effects of vegetation management strategies on habitat patch size and fragmentation.

TS-G135. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): Consider establishing experimental areas for the purpose of studying the role of microbiotic crust in ecosystem process and function and to develop new management techniques and test traditional management techniques for their ability to maintain or enhance microbiotic crusts.

TS-G136. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): On sites where microbiotic crusts have been determined to have a positive role in either soil stability, infiltration and soil water content, nutrient cycling, or vascular plant diversity and seedling recruitment, consider incorporating site-specific management activities to either maintain or improve microbiotic crust cover.

TS-G137. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): Consider restricting the locations of water developments and salt blocks to protect from grazing highly erodible soils or relict areas that provide value as rangeland reference areas.

TS-G138. Guideline: Consider the season and intensity of grazing use in maintaining soil and plant conditions that promote or restore infiltration rates and soil permeability (prevention of compaction). Consider short duration, low to moderate utilization with emphasis on grazing during dormant seasons.

TS-G139. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): On dry shrublands, consider adjusting livestock stocking rates so that during 8 out of 10 years foraging does not degrade soil or vegetative productivity during drought periods.

TS-G140. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): Consider developing flexible criteria with livestock grazing operators to ensure that during drought years, adjustments to grazing use can be accomplished before damage is done to soil and vegetative productivity on dry shrublands.

TS-G141. Guideline: Consider grazing strategies that promote vegetative cover, soil organic matter, high water infiltration rates, subsurface flow, and plant physiological health.

TS-G142. Guideline: Consider designing management flexibility into grazing strategies in order to provide for seedling establishment of perennial vegetation during years with above-normal precipitation.

TS-G143. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): Where practical, consider consolidating allotments or livestock herds to maximize management flexibility and grazing treatment effectiveness.

TS-G144. Guideline: Wherever possible and practical, consider using time control grazing principles.

TS-G145. Guideline: Consider designing grazing rotation patterns according to localized perennial bunchgrass physiological requirements.

TS-G146. Guideline: As allotments in good ecological condition become vacant, consider establishing some of them as alternate forage sources. They may be used by permittees who must be temporarily restricted from use of areas burned by fires, or who are facing major reductions in grazing use due to conflicts with riparian, wildlife, and other values.

Altered Sagebrush Steppe: Guidelines For Objective TS-O13

TS-G147. Guideline: On rangelands dominated by annual plants, consider livestock grazing strategies that provide sufficient residue to maintain hydrologic function following grazing.

TS-G148. Guideline: Consider developing strategies that are based on the weakest point of the life cycle of exotic plants. Focus research efforts on those species that lack detailed information regarding life cycles. Explore the possibilities of grazing strategies that may affect seedling establishment of annual grasses.

TS-G149. Guideline: Consider investigating new techniques of biological control for exotics and annuals. Consider the use of smut and fungus to control cheatgrass populations.

TS-G150. Guideline: Consider using green stripping or other types of fire breaks, along roads and transition zones between altered sagebrush steppe and the native rangeland plant community, to protect adjacent native rangeland areas and altered sagebrush steppe from wildfire.

TS-G151. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): The following techniques may be used to help control or rehabilitate cheatgrass-dominated ranges: (1) intensive early spring grazing in cases where soils, remnant native perennial plants, and microbiotic crusts will not be adversely affected; (2) herbicides, especially in combination with burning or plowing.

TS-G152. Guideline: (Applies to Alternative 6 only): Consider developing new techniques for managing altered sagebrush steppe through experimentation and through coordination with the

scientific community. Consider establishing studies and experiments on various altered sagebrush steppe sites throughout the project area.

TS-G153. Guideline: (Applies to Alternative 7 only, inside reserves): Livestock grazing strategies may be used on rangelands dominated by annual plants for controlling wildfire on altered sagebrush steppe.

TS-G154. Guideline: Especially in Range Clusters 5 and 6, consider areas within the current range of species such as sage grouse, sharp-tailed grouse, and mountain quail as a high priority for conversion of exotic monocultures to native shrublands.

TS-G155. Guideline: Consider the following when seeding altered sagebrush steppe and other areas:

- soils and precipitation;
- availability of local native seed;
- ability of seeded species to compete with exotic annuals;
- long-term success of seeded species meeting objectives;
- risk of failure;
- meeting biodiversity and wildlife needs;
- not creating monocultures;
- fragmentation and patch-size issues;
- planting and regeneration of shrub species.

TS-G156. Guideline: Consider creating "islands" of diverse seedings by sowing or planting following expansive wildfire to provide seed source for future recruitment.

Woody Species Reduction: Guidelines For Objective TS-O14

TS-G157. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): Where appropriate, consider avoiding intentional reduction in distribution or extent of native grasslands and shrublands. Management can occur that changes age classes of shrubs or amount of shrubs. Short-term, local adverse consequences to terrestrial resources may be permitted to achieve higher priority ecological objectives. Give priority to areas that have declining or special status species.

TS-G158. Guideline: Consider using prescribed fire for reducing woody species such as ponderosa pine, juniper, Douglas-fir, and mountain big sagebrush, on sites where they are displacing the native understory vegetation and where perennial grasses are still present in adequate amounts to permit fire.

TS-G159. Guideline: Consider removing livestock grazing early enough in the year to allow regrowth of fine fuels to carry fire.

TS-G160. Guideline: Consider laying out vegetation manipulation projects over a large enough area so that livestock and wildlife use will not be concentrated in the project area.

TS-G161. Guideline: Consider cover requirements for wildlife when laying out vegetation manipulation projects.

TS-G162. Guideline: Consider the following when developing juniper treatment plans: watershed

function, water quality, energy flow and nutrient cycling, wildlife habitat, social needs, economic use and potential, biodiversity and patchiness, and whether juniper is encroaching or is on a site where juniper used to occur under a natural disturbance regime.

TS-G163. Guideline: Consider identification and delineation for management of juniper (1) where it is encroaching but where native understory decline has not yet resulted; (2) where it has encroached and increased in density to where native understory has declined; and (3) where its density has increased to where all native understory vegetation has been displaced.

TS-G164. Guideline: To reduce juniper seedlings and trees, consider implementing prescribed fire on sites where adequate fuels remain present to carry fire and create flame lengths sufficient to kill juniper. The presence of juniper seedlings in the understory of dry shrub, dry grass, or cool shrub plant communities, or the presence of more than one large tree per acre capable of producing seed, may make an area a candidate for prescribed fire treatment.

TS-G165. Guideline: On sites where juniper has increased in density to the point where understory native vegetation is declining or nearly all understory vegetation has been lost, consider a harvest (cutting or chaining) strategy that leaves slash on site, to improve surface soil conditions and permit easier establishment and recovery of native or desired exotic understory vegetation, and to prevent excessive nutrient removal from these sites. Consider saving large older trees.

TS-G166. Guideline: Consider giving high priority to areas where shrub and grass cover is adequate to carry fire, rather than areas where cutting of trees is necessary, for treatment of juniper encroachment into shrub/grass or grass communities.

TS-G167. Guideline: (Applies to Alternatives 4, 5 [outside livestock priority areas], and 6 only): On sites where juniper is already in the system and is not dense to the point of reducing understory vegetation, consider enhancing plant and animal diversity by producing a mosaic on the landscape that includes western juniper in mixture with shrub and grassland types. Consider management that promotes western juniper stands characterized by a full complement of understory vascular and non-vascular vegetation.

TS-G168. Guideline: (Applies to Alternative 6 only): Experimental areas for the purpose of studying various juniper control methods such as mechanical, grazing, chemical, and burning may be established in areas where other species are not at risk.

TS-G169. Guideline: When attempting to reduce juniper density, consider using methods that maintain or improve the areas long term capability to (1) resist wind erosion, (2) support water infiltration and permeability rates, and (3) permit moisture storage, while increasing abundance, occurrence, and vigor of the herbaceous and shrub components.

TS-G170. Guideline: In Range Cluster 1, consider using an adaptive management approach to validate the effects of juniper woodland density on hydrologic processes and aquatic integrity. Possible framework could include a paired watershed approach to evaluate streamflows and water quality parameter changes with manipulation of juniper density.

Aquatic/Riparian Strategies

Guidelines Related to Objectives AQ-O1, AQ-O2, AQ-O3, AQ-O5, AQ-O6, and AQ-O10

AQ-G1. Guideline: Consider the following criteria when delineating riparian conservation areas for stream channels based on information from site-specific NEPA analysis or Ecosystem Analysis at the watershed scale (EAWS):

- Flood-prone area as defined by Rosgen (1994) or the 100-year floodplain;
- Area of active channel migration;
- Extent of riparian vegetation and potential riparian vegetation;
- Area of vegetation that would provide shade, large woody debris, nutrients, microclimate, root strength, habitat for riparian-dependent species, and a buffer to water quality and non-channelized sediment movement and deposition;
- Edge of valley bottom;
- Soil type;
- Adjacent sideslope sensitivity.

AQ-G2. Guideline: Consider the following criteria when delineating riparian conservation areas for lakes and wetlands based on information from site-specific NEPA analysis or EAWS::

- The area inundated by normal high water;
- The area annually influenced by a high-water table and saturated soils consistent with mean annual precipitation regimes;
- The extent of riparian vegetation;
- Area of vegetation that would provide shade, large woody debris, nutrients, microclimate, root strength, habitat for riparian-dependent species, and a buffer to water quality and non-channelized sediment movement and deposition;
- Soil type.
- Adjacent sideslope sensitivity.

AQ-G3. Guideline: Consider the following criteria when delineating riparian emphasis areas for lands prone to landslides: Lands identified through existing Forest Service/BLM classifications, inventories, or slope stability modeling (for example, Level I Stability Analysis, Hammond 1992).

AQ-G4. Guideline: Within watersheds, consider completing vegetation treatments within a short period of time (less than five years). Avoid reentry for a duration that approximates the time interval between natural disturbance events.

AQ-G5. Guideline: Consider planning vegetation treatment actions in a manner to reflect the spatial and temporal distribution of natural disturbances.

AQ-G6. Guideline: Consider strategies that allow sufficient residual vegetation after grazing to protect stream banks, dissipate energy, and trap sediment during periods of high flow.

AQ-G7. Guideline: Consider controlling the timing and intensity of grazing to prevent damage to stream banks when they are most vulnerable to trampling.

AQ-G8. Guideline: On rangelands, consider locating water development, fencing, salt, and supplements on upland areas to keep domestic livestock from congregating in riparian areas.

AQ-G9. Guideline: Consider changing livestock type from cows to sheep, to reduce impacts to riparian areas, except in historical, current, or proposed bighorn sheep sites.

AQ-G10. Guideline Consider using regional or state office riparian evaluation guides and procedures when assessing Proper Functioning Condition.

AQ-G11. Guideline: Consider assessing Proper Functioning Condition when conducting Ecosystem Analysis.

AQ-G12. Guideline: Consider monitoring those attributes rated as non-functional.

AQ-G13. Guideline: Consider developing Riparian Management Objectives in cooperation with interested parties including federal, state, and local governments; private landowners; livestock operators; and tribal governments.

AQ-G14. Guideline: NEPA and planning documents for projects within riparian conservation areas should specify best management practices (BMPs) required to achieve the Riparian Management Objectives, and should include a discussion of the anticipated effectiveness of the BMPs.

AQ-G15. Guideline: If new information becomes available that indicates that established Riparian Management Objectives do not meet the management intent for the riparian conservation areas, consider revising Riparian Management Objectives to incorporate the new information.

AQ-G16. Guideline: Consider establishing qualitative and quantitative watershed disturbance (natural and management) levels or parameters for upland and riparian area zones to provide early indication of potential watershed cumulative effects and causal mechanisms for aquatic and riparian conditions.

AQ-G17. Guideline: When prioritizing watershed restoration activities, consider life history patterns and requirements of riparian-dependent species, especially threatened, endangered, proposed, and candidate species and associated designated critical habitat and designated habitat within recovery zones. Concurrently consider state water quality agencies' priorities for restoring water quality.

AQ-G18. Guideline: When determining restoration location priorities, consider areas that will improve degraded stream reaches typically adjacent to or downstream of high quality habitat, thereby improving connectivity.

AQ-G19.Guideline: Consider reducing road-related effects on watershed and aquatic resources as a high priority for watershed restoration actions. Priority forest and rangeland clusters and suggested approaches are discussed in the *Scientific Assessment.*

AQ-G20. Guideline: Consider designing watershed restoration actions to influence key aspects of ecosystem structure and function such as the following:

- Channel morphology and hydrologic and sediment regimes;
- Riparian vegetation condition and complexity;
- Stream habitat complexity;
- Channel structure (that is, wood and bank stability).

AQ-G21. Guideline: Diagnose causal mechanisms and processes of degraded watershed and aquatic conditions and evaluate various treatment techniques.

AQ-G22. Guideline: Consider watershed restoration actions when a change has occurred in the management regime responsible for degraded conditions .

AQ-G23. Guideline: Consider directing restoration at the processes that affect the temporal and spatial diversity of natural aquatic systems.

AQ-G24. Guideline: Consider focusing watershed restoration where a minimal investment can improve or secure the largest amount of high quality habitat and diverse riparian-dependent species communities.

AQ-G25. Guideline: Consider cooperative watershed restoration actions with adjacent landowners, particularly in low-elevation floodplain river systems.

AQ-G26. Guideline: When conducting Ecosystem Analysis, consider using the information to provide a context for setting watershed restoration priorities.

AQ-G27. Guideline: When conducting watershed restoration actions, consider addressing watershed-scale processes and focusing actions in parts of the watershed that play crucial ecological roles in watershed and aquatic habitat condition and in the health of riparian-dependent species populations.

AQ-G28. Guideline: Consider land acquisition, exchange, and conservation easements to meet Riparian Management Objectives and facilitate restoration of fish stocks and other species at risk of extinction.

AQ-G29. Guideline: Consider cooperating with federal, tribal, state and local governments to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.

AQ-G30. Guideline: Consider cooperating with federal, tribal, state, and local agencies, and private landowners to develop watershed-based Coordinated Resource Management Plans (CRMPs) or other cooperative agreements to meet RMOs.

AQ-G31. Guideline: Consider cooperating with federal, tribal, and state wildlife agencies to identify and eliminate ungulate impacts that prevent attainment of RMOs or adversely affect aquatic resources.

AQ-G32. Guideline: Consider cooperating with federal, tribal and state fish management agencies to identify and eliminate adverse effects on aquatic resources associated with fish stocking, fish harvest, habitat manipulation, and poaching.

AQ-G33. Guideline: Trees may be felled in riparian conservation areas when they pose a safety risk. Consider keeping felled trees on site when needed to meet woody debris objectives.

Category 1 Sub-basins: Guidelines Related to Objective AQ-O4

AQ-G34. Guideline: Consider designing watershed restoration activities to secure fish strongholds and other important riparian-dependent species communities and to improve watershed and aquatic conditions in adjacent watersheds or downstream reaches to improve connectivity.

AQ-G35. Guideline: Activities designed to prevent large natural disturbances should not be considered a priority for Category 1 subbasins.

AQ-G36. Guideline: Activities for non-watershed/aquatic resources can be permitted if compatible with the Category 1 sub-basin objective. These activities should generally take place outside of fish strongholds and other important riparian-dependent species communities and should pose minimal risk to watershed and aquatic resources. Existing transportation networks should be used for these activities.

AQ-G37. Guideline: Category 1 sub-basins should not be considered as sites for large-scale experimental land management activities.

AQ-G38. Guideline: Consider coordinating with federal, tribal, state, and local governments and resource users to reduce the spread and introduction of non-native fishes.

Category 2 Sub-basins: Guidelines Related to Objective AQ-O7

AQ-G39. Guideline: To improve connectivity, consider designing watershed restoration activities to secure fish strongholds and other important riparian-dependent species communities and improve watershed and aquatic conditions in adjacent watersheds or downstream reaches.

AQ-G40. Guideline: Within fish strongholds and other important riparian-dependent species communities, consider activities that pose minimal risk and contribute to restoration of watershed, riparian, and aquatic resources. Consider existing transportation networks for these activities.

AQ-G41. Guideline: Outside fish strongholds and other important riparian-dependent species communities, consider activities that are designed to restore watershed, riparian, and aquatic resources. Restoration activities that address multiple ecological objectives but that pose high short-term risks to aquatic resources may be appropriate if there is an expected long-term benefit to watershed, riparian, and aquatic resources.

AQ-G42. Guideline: Consider coordinating and possibly financing watershed, aquatic, and riparian restoration through forest and rangeland restoration and production activities. For example, when treating forest health problems in dry and moist forests concurrently, conduct watershed, aquatic, and riparian restoration activities such as road obliteration, closure, and improvements.

AQ-G43. Guideline: Activities that reduce threats from natural disturbances outside natural ranges of variability may be implemented to protect sensitive and fragmented riparian-dependent species populations.

AQ-G44. Guideline: Category 2 sub-basins outside fish strongholds and other important riparian dependent species communities may be appropriate locations for broad-scale experimental treatments such as large-scale forest health treatments or livestock grazing strategies.

AQ-G45. Guideline: Consider coordinating with federal, tribal, state, and local governments and resource users to reduce the spread and introduction of non-native fishes.

Category 3 Sub-basins: Guidelines Related to Objective AQ-O9

AQ-G46. Guideline: Consider planning and implementing watershed restoration activities to conserve fish strongholds and habitats occupied by species of concern or federally listed threatened, endangered, and candidate species.

AQ-G47. Guideline: Within fish strongholds and other important riparian-dependent species communities, consider management activities that use the existing road network.

AQ-G48. Guideline: Consider coordinating and possibly financing watershed, aquatic, and riparian restoration through forest and rangeland restoration and production activities. For example, when treating forest health problems in dry and moist forests, concurrently conduct watershed, aquatic, and riparian restoration activities such as road obliteration, closure, and improvements.

AQ-G49. Guideline: Activities that reduce threats from natural disturbances outside natural ranges of variability may be implemented to protect sensitive and fragmented riparian-dependent species populations.

AQ-G50. Guideline: Category 3 sub-basins outside fish strongholds and other important riparian-dependent species communities may be appropriate locations for broad-scale experimental treatments such as large-scale forest health treatments or livestock grazing strategies.

AQ-G51. Guideline: Consider coordinating with federal, tribal, state, and local governments and resource users to reduce the spread and introduction of non-native fishes.

Water Quality: Guidelines Related to Objective AQ-O13

AQ-G52. Guideline: Consider cooperating with state water quality agencies in their monitoring, review, and determination of existing conditions in comparison to state Water Quality Standards, for which the state agencies will identify the status of water quality and the risk to beneficial uses of water.

Terrestrial and Aquatic Species and Habitats

Habitats for Federal Trust Responsibilities: Guidelines For Objective HA-O1

HA-G1. Guideline: Through the consultation process, consider developing cooperative efforts with tribes to understand and identify their socially and traditionally important habitat types (ethno-habitats).

HA-G2. Guideline: Consider using tribal cultural expertise to both identify and evaluate socially and traditionally important ethno-habitats. (See also TI-O2.)

HA-G3. Guideline: Through the consultation process, consider developing mitigation measures to protect and restore habitat conditions to provide opportunities for cultural/traditional use.

HA-G4. Guideline: During project implementation and monitoring phases, consider allowing for new information and requests from affected tribes or traditional users for changes in ethno-habitat conditions to be incorporated into project effects and management decisions. (See also HU-O2)

HA-G5. Guideline: In the process of developing land tenure plans, consider both American Indian cultural uses and tribes' treaty and social well-being rights and interests. (For example: through

consultation with tribes, identify land exchanges that would benefit/protect tribal fishing, gathering, hunting rights and interests. Consider ways to avoid loss of cultural places culturally significant to tribal traditional practices.) (See also HU-O2, TI-O1.)

HA-G6. Guideline: Through the tribal consultation process, consider modifying livestock grazing patterns (especially during spring months) to avoid conflicts with plant gathering practices (for example at root and berry patches) and to avoid affecting growth cycles of culturally significant plants. (See also TS-O4)

HA-G7. Guideline: Through consultation and/or cooperation with tribes, consider identifying ways to enhance habitat conditions for American Indian-tribal interests and rights in fishing, hunting, gathering and livestock grazing.

Viable Populations, and Listed Species Habitats and Recovery: Guidelines For Objectives HA-O2 through HA-O7

HA-G8. Guideline: Where it is determined that conflicts exist, consider excluding cross country skiing and/or snowmobiling, and the like, to prevent disturbance of known or suspected late winter caribou habitat.

HA-G9. Guideline: Consider managing winter recreation activities to minimize conflicts with the conservation of forest carnivores and wintering areas such as dens and ungulate winter ranges.

HA-G11. Guideline: Consider avoiding roading and harvest that results in fragmentation and/or reduction of early winter caribou habitat.

HA-G12. Guideline: Consider the foraging, nesting, and hiding requirements of terrestrial riparian-dependent species as a high priority in management decisions in riparian areas.

HA-G13. Guideline: Activities that reduce threats from natural disturbances outside natural ranges of variability may be implemented to protect sensitive and fragmented populations of riparian-dependent species.

HA-G14. Guideline: Consider developing rangeland management strategies including prescribed fire and livestock grazing schemes that provide for restoration of mountain mahogany, bitterbrush and quaking aspen.

HA-G15. Guideline: Consider maintaining productivity of current wild ungulate winter range. Apply appropriate livestock grazing measures if areas are within an allotment.

HA-G16. Guideline: Consider developing integrated management strategies addressing long-term ecological integrity of sites and ecosystems to provide for associated species viability or conservation.

HA-G17. Guideline: Consider conducting inventories to locate local and rare endemics and disjunct populations of vertebrates.

HA-G18. Guideline: In the decision-making process, consider using existing information sources such as state Natural Heritage Data Bases.

HA-G19. Guideline: The geographic distribution of threatened and endangered plant species and population sizes may be determined through acceptable inventory methods. Consider documenting distribution in a corporate GIS database, keeping the layer accurate and current.

HA-G20. Guideline: Consider developing an interim species response matrix that includes documented (from literature searches) responses of the species to management activities or natural phenomena. Consider using this information to determine management activities for which mitigation measures should be recommended or are needed.

HA-G21. Guideline: Consider developing the conservation strategy guide in a format that can be incorporated into land management planning documents as an amendment.

HA-G22. Guideline: Consider working with state wildlife agencies to eliminate hunting or trapping of species with viability concerns.

HA-G23. Guideline: Consider using information from multiple ecological scales, applied in the appropriate ecological context in tiered planning processes. For example, at the scale of this EIS it is appropriate to use information at the level of ecological reporting units (ERUs); at the scale of Forest Service and BLM land-use plans, it is appropriate to use information that considers the interactions and locations of specific ecosystems and groups of species.

HA-G24. Guideline: During ecosystem analysis consider conducting an analysis of connectivity. Specific conditions and particular locations (including those identified in the *Scientific Assessment*) could be evaluated as to (1) their ability to link large blocks of habitat, (2) the likelihood that existing bottlenecks may prevent connecting important areas, and (3) the opportunities to obtain more secure areas of connectivity that have mixed ownerships.

HA-G25. Guideline: Consider working with state highway departments to secure travel routes where interstate highways, such as Snoqualmie Pass, Monida Pass, Santiam and Lost Trail Pass, are currently acting as barriers for terrestrial species, particularly large, wide-ranging carnivores.

HA-G26. Guideline: Contingent on human safety concerns, consider managing human access and minimizing potential disturbances to protect caves, old mines, old buildings, bridges and other sites being used by bats.

HA-G27. Guideline: Consider evaluating the potential habitat value of talus for reptile and other species prior to any proposal to disturb or remove.

HA-G28. Guideline: Consider habitat features such as wetlands, bogs, wet meadows, seeps and springs where management activities could cause unacceptable impacts to amphibians.

HA-G29. Guideline: Consider inventorying sites of amphibian populations within wetlands, and other sites expected to be important to amphibians to aid in characterization of local species and populations.

Livestock/Wildlife Conflicts: Guidelines For Objective HA-O7

HA-G30. Guideline: Consider inoculating domestic sheep against lung worm and other viruses known to be problems for bighorn sheep prior to entry on public lands within or adjacent to bighorn sheep habitat. Keep inoculations current. Coordinate with federal and state animal health agencies (APHIS, State Agriculture Department, etc.)

HA-G31. Guideline: Consider using livestock handling techniques that avoid key habitat areas for carnivores. Minimize conflicts that lead to animal damage control measures. Control only known offending animals and as a last resort.

HA-G32. Guideline: In historical unoccupied bighorn sheep ranges or recent reintroduction sites and proposed bighorn sheep reintroduction sites, consider changing the class of livestock from domestic sheep to cattle if the opportunity presents itself. This should reduce the potential of disease transmission between domestic and wild sheep in the future.

Human Uses and Values

Collaboration: Guidelines Related to Objective HU-O1

HU-G1. Guideline: Consider creating small groups such as local advisory groups or task forces that meet face-to-face over time and contain a balance of interests in public land management. This may help diverse stakeholders to better understand different points of views and acquire what others have learned through interaction with natural resources. This is not a substitute for efforts to encourage participation from the general public, but it could help to ensure that diverse interests are acknowledged and carefully considered.

HU-G2. Guideline: Consider the requirements of the Federal Advisory Committee Act (FACA) when establishing advisory groups.

HU-G3. Guideline: Consider holding business-like annual stakeholder meetings in a reasonable number of communities within the unit's geographic area. These meetings could include presentation of the previous year's activities and planned projects and priorities for the upcoming year, including sufficient background information. Stakeholders could then have time to provide comments, and the appropriate line officer would document specifically how the comments were used.

HU-G4. Guideline: Consider focus groups, regular polls or surveys of local and regional residents and interest groups, or regular public forums designed to seek input and comment on projects and programs.

HU-G5. Guideline: Consider ways for the public to nominate areas they find important for restoration or for other projects. The line officer would share the final list of projects with the public. This could help to align scientific priorities with public ones, as well as alert local businesses and residents (such as contractors, suppliers, or employees) about potential opportunities.

HU-G6. Guideline: Consider establishing cooperative agreements between agencies and other landowners to help meet ecosystem objectives and manage access across administrative boundaries. Agreements with private landowners would be voluntary, based on positive incentives. Recognize the sensitivity and volatility of private lands in ecosystem management.

HU-G7. Guideline: (Applies to Alternative 4 only): Consider organizing public participation efforts based on Ecological Reporting Units or other meaningful ecological units such as river basins or watersheds.

HU-G8. Guideline: To better understand and incorporate how the public defines and values places in the landscape, consider conducting a place assessment for use in land-use planning, implementation, and monitoring efforts.

HU-G9. Guideline: (Applies to Alternative 5 only): Consider organizing regional-level planning groups, jointly chartered by the Forest Service and BLM under the Federal Advisory Committee Act. Membership could be designed to represent a full range of stakeholder interests and could be expected to meet at least two to four times per year, to make recommendations on ecosystem management and other land-use planning, implementation, and monitoring efforts. The groups could establish subgroups to address issues at a more local level and make recommendations to the regional group.

Minimizing Shifts in Commercial Activity: Guidelines Related to Objective HU-O5

HU-G10. Guideline: The local manager may seek advice and recommendations of local, state, and tribal officials, in determining the annual rate of change in outputs during the adjustment period until the objective is met.

Economic Diversity: Guidelines Related to Objective HU-O7

HU-G11. Guideline: Consider exploring possible actions with the appropriate economic development agency(ies), elected officials, and the public.

HU-G12. Guideline: Consider designating federal or cooperative sustained yield units.

HU-G13. Guideline: Consider locating and constructing new federal facilities in wildland areas with consideration for wildland fire; refurbish old facilities with fire resistant materials as maintenance is required.

HU-G14. Guideline: Consider giving high priority for prescribed burning to areas covered by agreements with local fire protection agencies and landowners.

HU-G15. Guideline: Consider the trade-offs between reducing the risk of wildfire and maintaining wildlife cover when conducting prescribed burns. Techniques can include varying canopy closure; retaining logs to maintain wildlife cover and soil productivity; and retaining patches of unthinned habitat where it is not hazardous to private property.

HU-G16. Guideline: Consider maintaining and keeping open the access routes for emergency equipment near wildland/urban interface areas.

HU-G17. Guideline: Consider working with interested county and local governments to develop building codes, access requirements, and fire-fighting water sources in areas of new rural construction; and to develop guidelines for existing property owners to reduce the potential for loss from wildland fires.

HU-G18. Guideline: Consider supporting state and local government programs that encourage rural property owners to manage fuels and otherwise mitigate fire hazard on their property.

HU-G19. Guideline: Consider using the following approaches to monitor the effectiveness of efforts to increase community resiliency: First, survey participants in the process to gain an understanding of how they perceived the process, outcome, and the federal agencies' roles and contributions. Second, help communities track the economic and social indicators developed. Third, track changes in resiliency across the interior Columbia River Basin using the Community Resiliency Index (or similar measure) to assess whether improvement is being made from a basin-wide perspective.

HU-G20. Guideline: Consider the following methods to assess and address the needs of community leaders and residents: cosponsoring workshops to assist community leaders and residents prepare for economic and social changes expected to affect local areas; strategic planning and marketing; promotion of desirable industries; and enhancing awareness of grants and other possible funding sources.

HU-G21. Guideline: Consider using advisory groups to provide a forum for identifying the locally important aspects of community resiliency and how the Forest Service and BLM could assist with efforts to improve them.

HU-G22. Guideline: To help increase resiliency in interested communities in the forested parts of the project area, consider starting with communities located in the "isolated timber-dependent areas in counties with slower population growth" identified in the *Economic Chapter of the Scientific Assessment.*

HU-G23. Guideline: Consider generating a list of economic and social indicators judged to be of importance to local communities. These could then be tracked over time to measure progress toward increasing resiliency. Machlis and Force (1995) can be used as a reference.

HU-G24. Guideline: (Applies to Alternative 7 only): Consider focusing efforts to increase resiliency on communities that are least resilient and expected to be most affected by changes in outputs resulting from creation of reserves.

HU-G25. Guideline: (Applies to Alternative 6 only): Possible variables to study include the role of civic leadership, social cohesion, economic diversity, amenity resource base, and public land management policies and outputs. Possible strategies include survey research, focus groups, and secondary research. Longitudinal studies of selected communities and how they change over time may be helpful; the case studies and economic information collected at the community level as part of the *Social Chapter of the Scientific Assessment* may provide a useful starting point.

HU-G26. Guideline: (Applies to Alternative 6 only): Consider community and regional input in designing and conducting research, to verify that it is responsive to a wide range of issues facing rural communities in the planning area. Communicate the findings in a diversity of formats and styles to reach community leaders and residents.

HU-G27. Guideline: (Applies to Alternative 6 only): Consider the following ways to monitor the effectiveness of programs or activities: (1) conduct surveys of participants to gain understanding of how they perceived the outcome and the federal agencies' roles, and (2) track economic and social indicators. Machlis (1995) can be used as a reference.

HU-G28. Guideline: (Applies to Alternative 6 only): Consider the experience and ingenuity of resource managers, community residents, and public land management stakeholders to determine appropriate procedures.

HU-G29. Guideline: (Applies to Alternative 6 only): Consider conducting an annual conference of advisory group members to share ideas and information.

HU-G30. Guideline: (Applies to Alternative 6 only): Some administrative units may seek the ability to pay public participants, particularly for tasks such as actively participating in monitoring all types of resource management activities.

HU-G31. Guideline: (Applies to Alternative 6 only): Consider monitoring the effectiveness of advisory groups through surveys of participants and regional and national populations, as well as by measuring progress toward the groups' stated objectives.

HU-G32. Guideline: (Applies to Alternative 6 only): Consider requesting that the Federal Advisory Committee Act (FACA) be clarified or adapted to allow more flexibility in creating or working with established public/private groups to assist with public land management planning, implementation, and monitoring.

HU-G33. Guideline: (Applies to Alternative 7 only): Consider tailoring requested programs to the type and level of impacts identified. For example, ecosystem enhancement programs could include

jobs-in-the-woods projects to hire dislocated forest workers and businesses in affected communities to work on ecosystem restoration projects at family wage levels.

Risks from Wildfire: Guidelines Related to Objective HU-O9

HU-G34. Guideline: Consider developing contracts for private sector participation in fuels management using salvage rights to materials removed when reducing risk of fire.

HU-G35. Guideline: Consider identifying possible sites where forage for livestock, fuelwood, or commercial forest products could be made available as a by-product of fuels reduction actions. If possible make such products available and at favorable terms for use in recognition of intermittent availability and additional management constraints.

Recreation Guidelines: Related to Objectives HU-010 through HU-O12

Recreation Opportunities: Guidelines Related to Objective HU-O10

Planning

HU-G36. Guideline: To maintain primitive or semi-primitive recreation opportunities, consider designing projects with road cost efficiency in mind and in a way that facilitates road closure or obliteration.

HU-G37. Guideline: Consider maintaining existing primitive and semi-primitive settings that provide opportunities for solitude and other benefits where these settings currently exist. If new roads or other actions in these areas are expected to change the long-term nature of the experience, manage the roads and/or access to maintain the setting's primitive qualities in a manner compatible with other objectives for the area. For Alternative 7, this applies to areas outside of reserves.

HU-G38. Guideline: Consider implementing a planning process such as Limits of Acceptable Change for all wildernesses and areas where visitor use has reached or could reach in the foreseeable future, a level that could adversely impact significant resource values and/or the quality of the visitor's experience. This process should define the types and levels of recreational impacts that are acceptable given the objectives of each area.

HU-G39. Guideline: (Applies to Alternative 7 only): Consider implementing a planning process such as Limits of Acceptable Change for all areas included within reserves to define the types and levels of recreational impacts that are acceptable given the objectives of each reserve. Existing recreational uses could be allowed provided that limits are not exceeded or at risk of being exceeded.

HU-G40. Guideline: Consider adopting a benefits-based approach to recreation and tourism planning.

HU-G41. Guideline: Seek to develop or maintain recreation opportunities that are socially, environmentally, and financially sustainable, considering the following principles:

- The tourism opportunity fits well into the ecosystem and the natural environment is the central attraction;

- ◆Any needed development is sensitive to the natural environment and minimizes impacts to native species and the natural landscape;
- ◆People have an opportunity to learn interesting aspects of the natural and cultural environment through outdoor recreation and active participation;
- ◆The tourism opportunity is developed in concert with and supported by local and regional residents;
- ◆The tourism opportunity is designed to become financially self-supporting (people are willing and able to pay);
- ◆Construction, management, and visitation take place with the goal of minimizing energy usage and encouraging people involved with the tourism opportunity to be environmentally sensitive.

HU-G42. Guideline: Consider opportunities to enhance and create corridor recreation opportunities by promoting linear recreation spaces (trails, bikeways, waterways and roads), and where appropriate, promote their use as connectors of attractions.

HU-G43. Guideline: Consider maintaining, creating, expanding, or diversifying trail systems in and adjacent to urban and rural areas, to link public and private recreation and tourism opportunities and to enhance compatibility among visitors by dispersing use.

HU-G44. Guideline: In cooperation with federal, tribal, state agencies, and local communities, consider participating in corridor management planning and plan implementation efforts for current and future Scenic, Historic, or Back Country Byways.

HU-G45. Guideline: Consider identifying and promoting the use of abandoned transportation corridors, such as rail routes.

HU-G46. Guideline: Consider providing for a variety of public recreation opportunities and experiences through visitor awareness, information on BLM- or Forest Service-administered recreation resources, interpretation, environmental education, protection, and adequately identifying these lands with an emphasis on field presence where appropriate.

HU-G47. Guideline: Consider increasing emphasis on resource protection, environmental education, interpretation, and information in the design of new facilities. Consider reducing maintenance costs and enhancing the visitors' experiences.

HU-G48. Guideline: Consider developing environmental education, interpretive, and information plans for all major recreation areas.

HU-G49. Guideline: Consider fish and wildlife management practices that provide a variety of wildlife-related recreation opportunities.

HU-G50. Guideline: (Applies to Alternative 7 only): Consider cooperating with other public and private recreation and tourism providers in the region to develop strategies for capitalizing on the reserve system.

HU-G51. Guideline: Consider input from interested cave groups when developing cave management plans.

Marketing

HU-G52. Guideline: Consider promoting the project area's historical and cultural resource sites as destination opportunities for recreation and tourism, where appropriate. For Alternative 7, direction applies to areas outside of reserves.

HU-G53. Guideline: Consider ecotourism opportunities to provide visitors with hands-on experience in accomplishing restoration activities.

HU-G54. Guideline: Consider encouraging the redistribution of visitors away from overused BLM- or Forest Service-administered lands to enhance the quality of the recreation experience and protect environmental quality.

HU-G55. Guideline: Consider developing a network of education and information centers to better market recreation and tourism products and services to residents and visitors.

Management

HU-G56. Guideline: When appropriate, consider managing visitor use on BLM- or Forest Service-administered lands through the permitting process to protect resource values, reduce use conflicts, and provide increased opportunities for safe and enjoyable recreation experiences.

HU-G57. Guideline: When appropriate, consider managing caves to provide primitive, undeveloped recreation opportunities. Consider taking special action to protect resource values if recreation use of a given cave has known or potential adverse impacts to threatened, endangered, and/or sensitive plants or animals; to cultural resources; or to geologic, paleontologic, or mineral features.

HU-G58. Guideline: Consider improved corridor signing, particularly trail signing.

HU-G59. Guideline: Consider maintaining the opportunity for spontaneous, non-regulated recreation through information, education, and maintenance efforts.

Construction/Maintenance

HU-G60. Guideline: Consider providing needed facility improvements in a fiscally responsible manner consistent with the Recreation Opportunity Spectrum (ROS) setting; existing and projected demand; protection of resources; local, state, and federal health and safety requirements; and physical development capabilities.

HU-G61. Guideline: Consider developing a priority-based maintenance management approach that ensures facilities and resources are cared for and exhibit the highest level of quality.

HU-G62. Guideline: Consider operating and maintaining existing recreation facilities, including recreation sites, roads, and trails in a manner that protects the public investment, provides for public health and safety, and fosters pride of public ownership.

HU-G63. Guideline: Consider developing environmental education materials for all ages that explain how natural systems work and the role and importance of fish, wildlife and other resources in these natural ecosystems.

Access for Recreation: Guidelines Related to Objective HU-O11

HU-G64. Guideline: Consider maintaining or providing access to existing recreational opportunities, including activities and facilities, unless it can be demonstrated that the social, physical, or biological effects of those uses preclude achieving more critical objectives.

HU-G65. Guideline: Consider using corridors to maintain public access to recreation and tourism opportunities.

HU-G66. Guideline: Consider providing additional access to water-based recreation opportunities where social and ecological conflicts would not be increased.

HU-G67. Guideline: Consider providing recreation access to BLM- or Forest Service-administered lands whenever possible through efforts, such as partnership relationships, exchange, ownership adjustment, or easement acquisition.

Efficiency in Recreation Management: Guidelines Related to Objective HU-O12

Partnerships

HU-G68. Guideline: Consider providing recreation opportunities by coordinating with private and other public recreation and tourism providers to make service delivery as efficient as possible and to promote cooperation rather than competition for market share. Coordinate marketing and public information efforts to make the public aware of opportunities.

HU-G69. Guideline: In coordination with other recreation providers, consider expanding efforts to provide increased awareness, understanding of, and appreciation for BLM- or Forest Service-administered resources and accompanying recreational opportunities through development of suitable information about these resources, including signs, brochures, and maps; through other print, visual, and electronic media; and through quality, on-the-ground public contact.

HU-G70. Guideline: Administrative units may wish to consider establishing or joining tourism cooperatives made up of other recreation providers to coordinate service delivery at a more local level.

HU-G71. Guideline: Consider creating or joining regional tourism councils to coordinate at the broad regional level. The purpose of the regional council could be to collect and distribute information on regional, national, and international trends affecting demand for and supply of recreation and tourism opportunities. It could also identify and foster opportunities for local units to work together to capitalize on trends and conditions identified.

HU-G72. Guideline: (Applies to Alternative 7 only): Consider working with local governments and residents to identify existing recreation opportunities that are now restricted or prohibited within reserves and to provide these opportunities on other public or private land.

HU-G73. Guideline: Consider participating with private, nonprofit and public sectors in developing and implementing a dynamic regional planning process that expands the Statewide Comprehensive Outdoor Recreation Plan (SCORP) for ongoing recreation and tourism planning, using a long-term approach.

HU-G74. Guideline: Consider supporting and enhancing interagency watershed planning efforts (such as state river basin planning), by pooling funds and expertise.

HU-G75. Guideline: Consider revenue sources of all agencies and potentially private sector funding to maximize the benefits of limited funds available for recreation and tourism.

HU-G76. Guideline: Consider creating and maintaining a database that may be used by all partners involved in providing outdoor recreation and tourism in the project area and that includes current tourism enterprises and outdoor recreation facilities, access, services, attractions, and programs that make up the project area's outdoor recreation and tourism industry.

Visitor Services

HU-G77. Guideline: Consider working with other agencies and private businesses, including recreation service partners, to develop and distribute coordinated information that will benefit both users and business interests on BLM- or Forest Service-administered lands.

HU-G78. Guideline: Consider increasing use of trained seasonal workers, volunteers, and private recreation providers to manage and maintain public facilities.

Environmental Education/Interpretation

HU-G79. Guideline: Consider public-private partnerships to manage, staff, and deliver quality outreach programs at education and information centers and to deliver off-site environmental education to groups, such as school children, clubs and organizations, and tourism service employees.

HU-G80. Guideline: Consider seeking to establish demonstration areas for recovery of operation and maintenance costs.

HU-G81. Guideline: Consider instituting a program similar to the Army Corps of Engineers' Recreation Partnership Initiative, which was designed to add recreation facilities to public lands at little or no cost to the federal government.

Revenues

HU-G82. Guideline: Consider evaluating the market for new types of profit-generating opportunities that could help pay for needed recreation opportunities that are not able to be self-supporting.

HU-G83. Guideline: (Applies to Alternatives 3 to 6 only): Consider recovering the fair market value from commercial recreation permittees, concessionaires, and sponsors of events for use of BLM- or Forest Service-administered lands.

HU-G84. Guideline: (Applies to Alternative 7 only): Consider discouraging commercially-sponsored recreation events in reserves.

HU-G85. Guideline: Consider implementing user fees at developed sites subject to criteria found in the Land and Water Conservation Fund Act, as amended, and consistent with fees being charged by other land management agencies and the private sector.

Visual Quality: Guidelines Related to Objective HU-O13

HU-G86. Guideline: Consider seeking opportunities to improve scenic integrity while meeting other objectives. Priority for improvement could be areas where scenic quality is relatively more important, such as recreation sites and areas that are adjacent or within the viewshed of growing urban areas.

HU-G87. Guideline: Consider designing vegetation management to increase visual variety where it is appropriate and currently lacking, increase species and size class variety, create or open up vistas from recreational routes and sites, and reduce risk of potential loss of scenic integrity from fire, insects or disease.

HU-G88. Guideline: Consider mitigating visual impacts and/or rehabilitating an equivalent amount of lower scenic integrity land to result in no net loss and reduce risk of potential loss of scenic integrity from fire, insects or disease.

HU-G89. Guideline: (Applies to Alternative 7 only): Consider applying existing visual quality objectives only in areas outside reserves; biological objectives could take precedence in reserves. In cases where other objectives have a higher priority than scenic integrity, and where meeting those objectives would lower scenic integrity, consider mitigating visual impacts.

Federal Trust Responsibility and Tribal Rights and Interests

Government-to-Government Cooperation and Relations: Guidelines Related to Objectives TI-O1

TI-G1. Guideline: (Applies to Alternatives 1, 2, 3, 6, and 7): For species or resources that are currently not meeting tribal needs, or are declining, or are expected to not meet future needs, consider assessing the potential for cooperative efforts to rehabilitate habitat or increase production of resources. (See also HA-O1)

TI-G2. Guideline: Consider working cooperatively with tribes to restore, manage, and rehabilitate resources that are not currently meeting tribal needs or are expected to decline in the future. (See also HA-O1)

TI-G3. Guideline: Consider allocating areas for habitats needed to maintain or restore harvestable populations within each area of tribal ceded lands. (See also HA-O1)

TI-G4. Guideline: Consider pursuing partnerships and cooperative funding for projects to enhance resources needed by tribes. (See also HA-O1)

TI-G5. Guideline: Consider working with the tribes and other agencies to establish a monitoring and tracking system, as needed, for tribal harvest, population trends of harvest species, effectiveness of treatments, and conflicts with other users, management, or resources demands. (See also HU-O2)

TI-G6. Guideline: Consider tribal reservation management plans and defer to tribal plans especially regarding "in common" rights and privileges. (See also HU-O2)

TI-G7. Guideline: Where species conservation needs exist, tribal harvest can be monitored by Forest Service and BLM/states/tribes to ensure that harvest and gathering does not adversely affect habitat or reduce populations of species to the point where federal listing may become necessary, or where federally listed, proposed, or candidate species are adversely affected. (See also HU-O2, HA-O1)

TI-G8. Guideline: Consider identifying opportunities to attain shared goals in cultural, social and natural resource arenas at all agency levels. Develop a program approach to cooperative activities; address barriers at the government-to-government level. (See also HU-S4,5,6)

TI-G9. Guideline: Consider developing a programmatic approach in addressing the agency/tribe consultation process. In so doing, liaison positions or functions with access to decision-makers

can be used along with policy processes, to help focus dialogue with affected tribes, solve issues, and enhance understandings between agencies and tribes.

TI-G10. Guideline: Where conflict occurs between statutory directions and tribal treaty rights or federal trust responsibilities, consider giving priority to the latter in relationship to the regulations. Where appropriate, seek opportunities to use tribal technical expertise in agency actions (planning and monitoring project phases), and share agency technical expertise and information with tribal governments.

Sense of Place: Guidelines For Objective TI-O2

TI-G11. Guideline: Consider using National Historic Preservation Act (Bulletin 38) direction as the context for identifying and understanding traditional cultural properties.

TI-G12. Guideline: Consider completing an assessment of places as a part of Ecosystem Analysis at the watershed scale within the consultation process with both affected tribes and American Indian communities and existing anthropological literature and research methods. (This may require specific studies and following confidentiality rules to provide assessment direction.)

TI-G13. Guideline: Consider conducting broad and intermediate scale efforts to involve multiple tribes/Indian communities to identify and provide direction to the federal agencies' American Indian place assessment process. (This would be best accomplished with agency facilitation of inter-tribal suggested directives.)

TI-G14. Guideline: Tribes, states, and federal agencies may participate in implementation oversight. (See also HU-O2.)

Road Management

Roads: Guidelines For Objectives RM-O2 through RM-O4

RM-G1. Guideline: Consider incorporating channel condition, sensitivity, and inherent capability when assessing road-related effects to ecosystems.

RM-G2. Guideline: The road risk/condition inventory could help identify risks to and potential effects on aquatic, riparian, and terrestrial resources, and assist in prioritizing areas for restoration or improvement.

RM-G3. Guideline: Consider developing and implementing methods for road management that weigh the benefits of the road, the environmental risks, and the potential environmental damage resulting from removing the road. Use this information to identify and prioritize roads for rehabilitation, closure, or obliteration to reduce road-related effects on watershed, soil, terrestrial, and aquatic resources.

RM-G4. Guideline: Incorporating wetlands and slope stability analyses into road design plans could help avoid wetlands and unstable slopes when locating roads.

RM-G5. Guideline: As part of each transportation plan, consider including a storm inspection and emergency maintenance process to prevent damage to watershed, soil, and aquatic resources.

RM-G6. Guideline: Consider relocating roads currently in riparian areas where they have failed or are at risk of failure, or otherwise are not contributing to attainment of ICBEMP objectives, to areas where risk of failure is low and relocation will contribute to attainment of objectives. Preference for road relocation is outside riparian areas.

RM-G7. Guideline: When obliterating or closing roads, consider implementing the most feasible method (for example, re-contouring, culvert removal, waterbar construction, seeding) to reduce road-related sediment and streamflow effects on aquatic resources.

RM-G8. Guideline: When conducting road risk/condition inventories, consider culverts, bridges, and other stream crossings, and evaluate the potential risk posed by each stream crossing during major storm events. Priority for upgrading could be based on the risk potential to watershed and aquatic resources and the ecological values of these resources.

RM-G9. Guideline: Consider controlling road access, where appropriate, with the intent to limit introductions of exotic aquatic species.

RM-G10. Guideline: When transporting toxic chemicals within riparian conservation areas, consider minimizing risk of spill by using alternative routes where feasible.

RM-G11. Guideline: To minimize impacts, consider using existing road systems for access. If new roads must be built, design them with the intent that they will be for short-term use and will be closed and rehabilitated.

RM-G12. Guideline: In lieu of road closures, consider alternative solutions such as improved maintenance or road redesign for reducing or preventing resource damage to provide continued access for recreation and other management opportunities.

RM-G13. Guideline: When analyzing access management strategies, consider the effects on all modes of recreational transportation such as automobiles, 4-wheel drive vehicles, all-terrain vehicles, motorcycles, bicycles, horseback, and foot traffic.

Adaptive Management and Monitoring

Adaptive Management: Guidelines Related to Objective AM-O1

AM-G1. Guideline: Consider agency or other researchers in study design, sampling methods, data collection, management and analysis, and evaluation of management applications for activities aimed at enriching knowledge of management techniques or ecological knowledge.

AM-G2. Guideline: Consider cooperating with other federal, tribal, state, and county governments and private landowners involved with the management of non-public lands. This cooperation might include (1) initiating statewide level interagency coordination meetings, (2) developing standard procedures for interagency and intergroup data storage, management, and exchange, (3) organizing and participating in state, regional, and national workshops attended by personnel from other agencies and organizations involved with noxious weed management, (4) participating in the Western Weed Coordinating Committee, (5) assisting in developing procedures for interagency and intergroup participation in cooperative studies of prevention of noxious weed spread, introduction of noxious weeds into new areas, treatments for the control of noxious weeds, and restoration of the native plant communities that have been infested by noxious weeds, and (6) developing interagency training courses focused on the 7 steps of the Integrated Weed Management strategy.

AM-G3. Guideline: Consider coordinating with county and city planning staff and zoning committees to include consideration for noxious weed management when developing or approving subdivision plans, special use permits, or leases.

AM-G4. Guideline: Consider outreach plans at all administrative levels to improve public understanding of the need to prevent the spread of noxious weeds and the need to manage the populations of noxious weeds.

AM-G5. Guideline: Consider coordinating herbicide treatment plans with American Indian tribes-communities and the interested public, and incorporating information into these treatment plans concerning habitats of social or traditional importance, in order to minimize risks to human health.

AM-G6. Guideline: Consider research that is geared toward assessing the effects of exotic species invasion on habitats of social or traditional importance to American Indians and how the native plant cultural places might be restored and conserved.

AM-G7. Guideline: (Applies to Alternative 6 only): Consider developing and using monitoring plans to assess the effects of fire and fire suppression activities on vegetation, soil, watershed, wildlife, and cultural resources.

Monitoring: Guidelines Related to Objective AM-O2

AM-G8. Guideline: Forest Service Regional and BLM State Offices should consider identifying pristine or near natural areas that can serve as reference for evaluation of long-term effects of land management actions. Consider selecting watersheds to represent the diverse conditions and environments found among forest and rangeland clusters and subbasin categories.

AM-G9. Guideline: If pristine or near natural watersheds are restricted in number and variation, consider using watersheds that have a limited minimal management history as part of the reference network to provide an indication of variability and rates of recovery.

AM-G10. Guideline: The effectiveness of recreation and tourism strategies can be measured and monitored in a variety of ways, including the following:

- Surveys of recreation visitors at select sites can assess satisfaction with the experience as well as demand for other opportunities.
- Data on visitor expenditures and estimation of net economic value (consumer surplus) can provide estimates of economic benefits.
- Household surveys can measure latent demand for recreation, while regional or national surveys can help to identify potential market segments, niches, and strategies for attracting new visitors.

AM-G11. Guideline: Consider monitoring recreationist and tourist use patterns, perceptions, impacts on the resource, and assessment of experience quality by geographic level (such as river reach, counties, regions, or other government entities). Consider defining minimum recreation and tourism data needs (such as quality of experience, activity by duration, important setting attributes, socioeconomic and resource impacts, and customer-desired management options), and adopt a set of standard measures and data base parameters needed for decision-making.

AM-G12. Guideline: Consider assessing the status and condition of existing recreation access roads and trails every five years and developing a strategy for their repair and maintenance commensurate with public use and resource protection.

AM-G13. Guideline: Consider the status and condition of existing recreation sites to determine which sites should continue to be managed, which should be redesigned and reconstructed or expanded, and which should be transferred to new ownership, closed, or removed.

AM-G14. Guideline: Consider monitoring the Special Recreation Permit and Concession Programs in order to strengthen them and assure appropriate user fees are charged.

AM-G15. Guideline: Consider an on-the-ground monitoring program that begins with the highest priority areas to assure that the basic natural, cultural, and scenic resources are properly protected as directed in land-use planning documents and legislative mandates.

AM-G16. Guideline: Consider monitoring planning area-wide progress toward recreation objectives using the scenic integrity model developed as part of the *Scientific Assessment.*

United States Department of Agriculture	Forest Service Regions 1/4/5/6	United States Department of Interior	Bureau of Land Management OSO/ISO/CSO

Reply to: 2670 (FS)
6840 (BLM-OR931)

Date: May 24, 1995

Subject: Implementation of PACFISH

To: USDI Bureau of Land Management: Vale, Spokane, Prineville, Ukiah, Bakersfield Districts and Upper Columbia-Salmon/Clearwater Ecosystem Office;
USDA Forest Service: PACFISH Forest Supervisors

The PACFISH Implementation Team has consolidated and responded to the questions raised at the five PACFISH Field Implementation workshops held during March and April at which over 450 BLM and FS field staff attended. Responses to these questions have been reviewed by the appropriate Regional and State office staff units and will provide the direction to be followed by field units.

The PACFISH Implementation Team has given special emphasis to the range program and the glossary term "retard attainment of RMOs" (Enclosure B).

Field units were to complete the screening of ongoing projects within watersheds with designated critical habitat within 30 days of the signing of the PACFISH EA and within 60 days of signing for those watersheds outside designated critical habitat. The former has been completed; for areas outside designated critical habitat we are extending the date for completion of the screens to July 1 (Enclosure C).

Implementation monitoring as discussed at the field team workshops has been refined and will be provided to the field units the first week of June. The PACFISH Field Implementation Team will be conducting field visits during the last half of calendar year 1995 to assess the compliance with and effectiveness of the PACFISH direction.

If you have any questions regarding PACFISH implementation, please contact Mike Crouse or Gordon Haugen. We would like to reiterate that implementation of this strategy is one of our highest priorities.

/s/ John E. Lowe
JOHN E. LOWE
Regional Forester

/s/ Michael R. Crouse for
ELAINE Y. ZIELINSKI
State Director, Oregon/Washington

Enclosures (3)

cc:
PACFISH DRFS
PACFISH FISH MGRS
PACFISH FWL DIRECTORS
PACFISH-PLAN

SUPPLEMENTAL INFORMATION

Identify conditions or activities (non-Federal actions) not addressed but which may be causing significant adverse effects to anadromous habitat or populations. These may include but are not limited to interaction with non-native fish, natural perturbations to the environmental baseline such as mass failures or existing transportation systems. This will be useful in identifying and prioritizing future restoration opportunities.

GENERAL

1. What are the procedures for amending LRMPs/RMPs/MFPs? The PACFISH EA amended the Forest Plans to the extent of incorporation of PACFISH direction and amended the BLM RMPs/MFPs where the PACFISH direction was in conformance with the plan. Conformance determinations have since been made on the BLM plans and have resulted in the determination that PACFISH direction is in conformance with existing plans, therefore, the LUPs do not need further amendment. (FS see #2 in RCHAs/RMOs above.)

2. If existing LRMP/RMP/MFP is more restrictive does it still apply? Where direction contained in existing plans is more restrictive than PACFISH direction the plan direction applies.

3. As the PACFISH strategy is interim in nature and will be supplanted by the Eastside Ecosystem Management Project (EEMP) and EISs, what are the consequences of a delay in the completion and implementation of this plan and EISs? If this situation were to arise two things must occur. First, the Decision Record (DR) for PACFISH Environmental Assessment (EA) must be amended. Second, consultation with the National Marine Fisheries Service (NMFS) must be reinitiated and a Biological Opinion (BO) issued by the NMFS.

4. As the California National Forests and BLM Districts are outside the geographical scope of the EEMP and EISs what are the options for long-term implementation? In California, the BLM and FS have solicited public comments on the development of a long-term management strategy for anadromous fish producing watersheds which will be used to determine the appropriate level of NEPA analysis and interagency coordination necessary to insure consistent implementation. The level of NEPA analysis determined appropriate, based on results of analysis of public comments and existing management direction, will focus the options available for long-term implementation. Some possible options are addressed in the California BLM and FS Notice for Public Comment found in Appendix H of the PACFISH EA.

5. How will implementation of the PACFISH strategy be funded? In the short-term (i.e., FY95) implementation will have to be funded out of available base funding. Over the longer-term (i.e., FY96) the FS Regional Fisheries Program Managers have prepared budget documents requesting additional funding for implementation. The BLM Anadromous Fish Habitat Management and Funding Strategy for the Columbia and Snake River Basins currently used in out year budget planning adequately addresses costs of implementing the PACFISH strategy.

RIPARIAN HABITAT CONSERVATION AREAS (RHCAs) & RIPARIAN MANAGEMENT OBJECTIVES (RMOs)

1. How will RHCAs be delineated? This will be appropriate to the level of implementation for which the RHCAs are being delineated. For example, at the broad planning level (i.e., LRMP/RMPs) the RHCAs would be delineated on maps or GIS themes at scales appropriate to the geographic scope of the plan. However as this level of delineation can be grossly imprecise, project level planning and implementation would require more precise methods ranging from delineation

on smaller scale maps to actual on the ground delineation (i.e. boundary tags within timber harvest units).

2. What flexibility is allowed in refining and/or modifying Riparian Management Objectives (RMOs) and Riparian Habitat Conservation Areas (RHCAs); can they be adjusted in the 18 month period of time; what is the process for making these adjustments? RMOs and RHCAs can be adjusted to meet local conditions. When adjustments are to be made in any of these two elements, it is to be done as a result of either a site-specific analysis or a watershed scale analysis (a watershed scale analysis is required when designated critical habitat could be affected). This must be documented in the NEPA process (e.g., project EA). These changes in RMOs and RHCAs require additional amendments to the forest plan. Documentation of these amendments must be made in the project level NEPA decision documents. A watershed scale analysis would follow the current approved version of the "Federal Guide for Watershed Analysis." However, it can be project driven and the degree of detail required should be commensurate with the project involved. For example, a watershed scale analysis driven by proposed road contruction within an RHCA would examine such things as the amount of large wood in the system at the watershed scale and the source and transport processes at work and the condition of spawning gravels and the source and transport processes for gravels and sediments within the watershed. This information would then be used in the location and design of the road or even to make the decision that new road construction would be too impactive to fish habitat. The key is expanding the analysis away from the reach specific level to the watershed scale without becoming trapped in a search for data or detail extraneous to the issue and/or question being addressed. The watershed scale analysis is not to be construed as a procedure which will take immense amounts of time and staffing. Forests and BLM Districts should not view watershed analysis as a barrier to accomplishing field activities. Also see response to question #3 under RHCAs and RMOs and question #1 under S&Gs.

3. Who approves changes in RHCAs and RMOs and what if any oversight will there be? The line manager responsible for the geographic area involved, typically the FS District Ranger or BLM Resource Area Manager, has final decision authority for changes in RHCAs or RMOs. Of course, any changes must follow procedures outlined in the strategy (see pages C-7 and C-5 respectively). To ensure consistency in application of these procedures the PACFISH Implementation Team has established review procedures. See attached "Documentation Form for Changes to Interim PACFISH RMOs and/or RHCAs" (Enclosure A). This form describes justification needed to modify RMOs and/or RHCAs, the approval process, and review process. The form will be completed and forwarded to the appropriate contact listed on the form. The PACFISH Quality Control Review Team will provide review back to the line manager within 30 days of receipt of the Documentation Form. The review will include a critique of the justification and will recommend ways to improve the modification process in the future, if necessary.

4. How will 100 year floodplains be determined? Where the 100 year floodplain has been officially designated (i.e., COE, FEMA, etc.) this delineation should be used. Where this has not been accomplished and if potential affects would dictate such an intensive effort (e.g., facilities construction) a similar methodology should be used. For other actions the following general definition should be applied: the 100-year floodplain would be comprised of the area inundated by a stream flow equal 2 1/2 to 3 times the maximum bank full depth. Additional guidance will be provided at a later date.

5. How do you refine RMOs to incorporate natural variability such as catastrophic events? Catastrophic events often do help shape habitat features described by the RMOs. However, this should be only considered when analyzing whether existing conditions are a result of human induced changes or simply long-term watershed processes. For example, if the large wood component of a watershed is outside the range specified in the PACFISH strategy then one must examine how large wood is normally supplied to the system. If catastrophic events such as landslides or blowdown appear to be the major sources for large wood then the existing conditions must be considered in the context of the timing of these events.

STANDARDS AND GUIDELINES

1. Is a watershed analysis required prior to either salvage harvest or road construction within RHCAs? TM-1 only requires a watershed analysis in watersheds with listed salmon or designated critical habitat. RF-2a states that no new roads will be built in RHCAs until watershed analysis is completed. Both of these S&Gs layout clear and concise direction. Several Forests indicated that this was going to be hardship and they cannot accomplish this. However, this should not be viewed as an impossible barrier to implementation of FS or BLM activities.

2. How are road management projects which increase sediment delivery to stream over the short-term but are intended to correct erosion sources to reduce sediment delivery over the long-term addressed? When analyzing any action, not just roads, both short- and long-term effects must be considered and managed. While short-term effects must not be great enough to jeopardize the fish population affected, avoidance of all short-term effects should not be allowed to preclude management changes or restoration actions necessary for the long-term recovery of habitats and/or populations.

3. Clarify prohibition of the sidecasting of snow within or abutting RHCAs in watersheds containing designated critical habitat for listed anadromous fish (RF-2 f.). This includes the obvious, snow containing soil and road surface materials. However, it is also intended to address the creation of berms or piles of snow which in melting or acting as barriers would concentrate melt water resulting in destabilized streambanks through saturation conditions elevated above "normal" conditions or actual hydraulic damage from flowing water.

4. Clarify FM-4 (prescribed burns). Any prescribed fire, including natural or accidental starts which are essentially managed as prescribed fires, either entirely within or including RHCAs must be managed under prescriptions which contribute to attainment of the RMOs of the particular RHCAs affected.

5. To who and when is the report on the implementation of the Road Management Plans to be sent? In watersheds containing listed anadromous fish or designated critical habitat the annual monitoring report to the NMFS will report on progress towards completing the plans. The plans will be provided to the NMFS when completed, however, there is no requirement to complete them within the lifespan of the strategy. The BO does include the conservation recommendation that the "FS and BLM should attempt, to the extent practicable, to complete Road Management Plans and Transportation Management Plans within the period of PACFISH implementation." In watersheds without listed anadromous fish or designated critical habitat there is no requirement in PACFISH to report on implementation of road management plans. Here normal public involvement procedures should be followed to ensure full public input.

6. Can PACFISH road S&Gs be implemented prior to completion of Road Management Plans? It is expected that implementation of S&Gs pertaining to roads will begin immediately. The Road management plans will serve to provide a documented plan for accomplishing PACFISH objectives through road management and should be completed as quickly as possible but should not hold up implementation of actions designed to minimize impacts of roads on aquatic habitat.

7. Does RF-2 c. 5. ("regulation of traffic during wet periods") require the closing of these roads? No, the "regulation of traffic" is expected to range from prohibiting use by certain classes of vehicles (e.g. heavy trucks) to complete closure to all traffic including ATVs.

8. When is reconstruction/maintenance considered as "new construction" (i.e., PACFISH S&Gs must be applied)? The practical test should be whether the impact from maintenance or reconstruction is similar in magnitude to those occurring from initial construction. If so, then reconstruction/maintenance should be considered to be new construction. In any event, road reconstruction and maintenance cannot retard or prevent the attainment of RMOs.

9. Are stream fords considered stream crossings (RF-4)? Yes. It is expected that such things as armoring of approaches and streambed to reduce sedimentation from traffic or erosion from high flows would be addressed.

10. Can Forest or District elect to proceed with a timber sale without upgrading culverts to meet RF-4? Yes, unless upgrading culverts that pose a substantial risk to riparian condition is a part of road reconstruction tied to the timber sale. Otherwise, requirements to meet S&Gs are not tied to any particular action. However, it would be prudent and logical to use any available opportunity that a project (such as a timber sale) might offer to upgrade culverts or comply with other S&Gs. If there is no opportunity to upgrade culverts as part of the project, then the FS/BLM would proceed to comply with PACFISH S&Gs based on other available opportunities and based on the degree of threat posed by the culverts. Upgrading culverts that pose a substantial risk to riparian condition should, of course, be a part of any road reconstruction or maintenance project.

11. Will ROW applicant be required to apply PACFISH S&Gs before hauling over FS/BLM ROWs? In general, yes, if a FS/BLM permit is required, the permittee should comply with applicable PACFISH S&Gs. Remember, PACFISH does not apply to private lands.

12. When, if ever, does an on-going project become a new project as determined by PACFISH? For the purposes of PACFISH implementation any project meeting the test of an on-going project will be considered to remain an on-going project if it is the same as what was in place at the time of PACFISH signature (Feb. 24, 1995). If this condition cannot be met, the project should be treated as a new project, i.e., PACFISH S&Gs applied.

For the purposes of Section 7 consultation an on-going project for which a new permit or lease is issued will be treated as a new action and require reinitiation of consultation prior to issuance.

However, if the project meets the criteria for an on-going project under PACFISH (see first part of this response) then it is expected that consultation

would be quickly accomplished byn tiering to the previous consultation documents.

13. What is meant by Retard Attainment of RMOs as related to grazing S&Gs?
The RMOs established by PACFISH describe habitat features which exhibit change relatively slowly, thereby, making it difficult, if not impossible, to detect change with the 18-month lifespan of PACFISH. Since the condition of the riparian vegetative community directly affects these RMOs and changes in riparian vegetation are generally detectable within short time periods, the recovery of the vegetation component of the riparian system will be used to predict whether grazing will ultimately degrade, retard, or prevent the attainment of the RMOs.

It is important to understand that for changes in grazing systems to be meaningful, they must be in place over the long term. This appears to conflict with the short-term nature of PACFISH. However, management put into place through implementation of PACFISH would be expected to continue through the long term if it conforms with direction provided by the EEMP and ICBEMP when these plans are completed. Based on the current state of knowledge of the effects of grazing on riparian and aquatic systems, it is expected that this would in fact occur. Therefore, the implementation of PACFISH can correctly be envisioned as the initiation of management changes over the next 18 months which will likely continue and whose benefits to aquatic habitat will become apparent through the long term.

Enclosure B which provides a discussion on the effects of grazing on riparian systems and recommended guidelines is based on this premise. These guidelines should be considered for livestock management outside watersheds with designated critical habitat or listed salmon. For watersheds with desginated critical habitat or listed salmon, terms and conditions in the appropriate biological opinion must be followed.

TERMS

1. Project: As used in the PACFISH strategy project refers to actions such as timber sales, grazing allotments, road maintenance (combined at the watershed level), or developed campground maintenance (again combined at the watershed level). Individual actions associated with these larger "projects" such as harvest units, road segments associated with timber sales, fences, reservoirs, grazing systems, or painting or repair of campground facilities would not be considered to be separate "projects".

2. Pool: Main Channel Pool: A scour or dammed pool that is a discrete fluvial (slow to directed scour thread) geomorphic (dished-out channel bed depression) channel unit that occupies the majority of the wetted channel width. Main channel pools are bounded by a head crest (upstream break in slope) and a tail crest (downstream break-in-slope). Main channel pools are used in the calculation of pool frequency, and for summaries of pool geometry, i.e. pool max-depth, wetted width and length, pool area and volume, width-to-max-depth, and residual depth.

Pocket Pools: Small bed depressions, often <30% of wetted width, formed 3round flow obstructions (boulder, logs, irregular bank or bank vegetation, jutting peninsulas, within fast water habitat types. These do not represent main channel pools, and are not used in the calculation of pool frequency or for summaries of channel geometry.

3. Salvage: See TM-1 and current agency direction. The definition of salvage used for PACFISH will not differ from that currently in use by the implementing agency at the time of project implementation.

4. Road: Travelway, currently or previously, used by motorized vehicles that affect or has the potential to affect the hydrologic and/or sediment regimes within a watershed.

5. Avoid: See PACFISH EA Glossary

6. Avoid to the Greatest Extent Practicable/Possible: See page 51 of the NMFS BO for PACFISH (Appendix J of the PACFISH EA).

7. Substantial Risk: See RF-4

8. Unacceptable Risk: See PACFISH EA Glossary. "Unacceptable Risk" screens are used to make final determination.

9. Measurable: Can be measured (detected) using commonly accepted scientific field methods. Use PACFISH monitoring procedures when available. In the interim see Section 7 Habitat Monitoring Protocol for the Upper Columbia River Basin dated June 1994.

10. Modify: Make changes in project design (e.g., grazing system, road design, etc.) to ensure that the goals and objects of the PACFISH strategy are achieved.

KEY/PRIORITY WATERSHEDS

1. What are the criteria for what constitutes a watershed where "anadromous fish can be reestablished"? "Anadromous watersheds" would generally be 4th or 5th field watersheds. Watersheds historically but currently not containing anadromous fish would be considered as an "anadromous watershed" if the barrier could reasonably be eliminated. For example a major barrier (i.e., scale of Hell's Canyon or Pelton Dams) would be considered to mark the upstream limits of an "anadromous watershed" while a stream reach dewatered from irrigation withdrawal would not be considered as such.

2. Clarification of key watersheds for non-listed species. The PACFISH strategy only designated key watersheds where critical habitat for listed salmon had been designated. While providing for the designation of key watersheds outside designated critical habitat the strategy deferred the designation of those to geographically-specific environmental analyses already in preparation or to be prepared (see page 17 of the PACFISH EA). However, this does not prevent Forests and Districts from stratifying watersheds for the purposes of prioritizing management opportunities based on the criteria for key watershed (see Appendix C, page C-19 of the EA). In fact this is encouraged where appropriate.

3. As the boundaries of key watersheds in California have not been delineated what criteria will be used to delineate these boundaries? During the interim strategy period, USGS 4th field watersheds will provide the boundary delineations upon which "key watersheds" are defined where designated critical habitat for winter-run chinook salmon occurs. "Key watershed" designations for the long-term strategy implementation will probably be similar in scale to "key watersheds" identified within the range of the northern spotted owl by the Northwest Forest Plan in California (e.g., generally 4th to 6th field).

WATERSHED ANALYSIS

1. What is the scale of watersheds on which watershed analysis will be performed? The PACFISH strategy follows guidance developed for the Northwest Forest Plan, i.e. generally watershed analysis will be performed on watersheds 20-200 square mile in size. Projects on mainstem rivers with watersheds greatly exceeding this size criteria should be analyzed based on a subwatershed of appropriate size. This may at times result in the delineation of "analysis watersheds" which do not totally conform to normal watershed delineation conventions (e.g., front drainages).

2. Should Section 7 watershed BAs be used as an information/data source when performing watershed analysis prior to preparation of grazing NEPA documents within the Snake River Basin? Yes, they should be used and the NEPA documents should reference them.

3. When is watershed analysis required? See the S&Gs.

4. How much specific information is needed for watershed analysis? Initially use existing information but identify missing data to be gathered and used in subsequent iterations. The level of information should be commensurate with the issues being addressed. The deciding official will determine exactly what constitutes adequate information.

5. Need to cost out and define watershed analysis. It is estimated that a watershed analysis will require from 4 to 6 weeks and $60K to $120K to complete.

6. What watershed analysis procedure will be used in PACFISH and how does it compare to FEMAT and EEMP? All three efforts are expected to utilize the same procedure, i.e., Federal Watershed Analysis Guide.

MONITORING

1. Implementation monitoring procedures need to be better defined.
Implementation monitoring, as developed by the PACFISH Implementation Team, consists of three parts; a summary monitoring form (see Enclosure C) to be used by the interagency PACFISH Quality Control Team for follow-up random sampling of on-going and completed projects to verify if S&Gs and RHCAs were applied and to complete an annual monitoring report for all FS and BLM units, a pre-project form for proposed changes in RHCA and RMO to be reviewed by the Quality Control Team, and a monitoring report providing detailed written and photographic documentation of all monitoring and inventory activities by specific watershed and like activities, including establishment of RHCAS, application of S&Gs, and progress toward attainment of RMOs. These procedures are now being finalized and will be provided as direction by early June.

2. Effectiveness monitoring procedures need to be better defined. The goal of effectiveness monitoring is to determine if applied PACFISH S&Gs are effective in protecting, maintaining, and restoring fish habitat conditions. Centralized team(s) are recommended to ensure that a standardized approach is implemented to facilitate consistency, timeliness, and reporting. A core group consisting of scientists and specialists would design the monitoring strategy, and regional teams would implement. The regional teams would be responsible for training, quality control, data processing and management, and a summary report. Because all projects can not be monitored, a sub-sampling scheme

stratified by like geoclimatic channels tiered to the Aquatic Ecomap Hierarchy, grouped like disturbances, and a reach specific core set of habitat variables would be used. A sufficient number of monitoring projects would be determined to adequately represent projects across the PACFISH area. Adequate sample sizes would be determined to ensure that monitoring would have the power to detect differences through time.

NOTE: Field units need to keep in mind that monitoring for PACFISH implementation does not release them of other project implementation monitoring requirements not related to PACFISH.

ENCLOSURE A

DOCUMENTATION FORM FOR CHANGES TO
INTERIM PACFISH RMOs AND/OR RHCAs

Background: In general, changes to interim Riparian Management Objectives (RMOs) and/or interim Riparian Habitat Conservation Area (RHCA) widths must be supported by data provided in Watershed Analysis. In the absence of Watershed Analysis, PACFISH also provides for modifications to RMOs and/or RHCAs if watershed-specific or stream reach-specific data are available to support a change. Regardless, any changes to RMOs and/or RHCA widths should be documented and reported to the PACFISH Quality Control Review Team. Such proposed changes should be prepared and/or reviewed by agency fisheries biologist, hydrologist, and geomorphologist/soil scientist. The appropriate agency line officer (Forest Service District Ranger or BLM Area Manager) should document their approval of the proposals by signature on this form. This form, with supporting data and site-specific map(s), should be submitted as follows as soon as possible following approval.

For activities on Forest Service administered lands:

Kerry Overton
PACFISH Quality Control Review Team
Intermountain Research Station
316 E. Myrtle
Boise, ID 83702

For activities on BLM administered lands:

Robert House
PACFISH Quality Control Review Team
Idaho State Office - BLM
3380 Americana Terrace
Boise, ID 83706

Describe watershed/stream reach (attach map):

Specifically describe proposed changes to RMOs and/or RHCAs (include on attached map):

Do federally-listed salmon occur in affected watershed?

Yes:_____ No:_____

If Yes, completion of Section 7 consultation is required by NMFS prior to implementation of any reduction in RMOs or RHCAs. What is status of Section 7 consultation process:

Provide rationale for proposed changes (attached Watershed Analysis and/or stream-specific data that support proposed changes):

Prepared by: _____ Date: _____

Approved by: _____ Date: _____

ENCLOSURE B

RECOMMENDED LIVESTOCK GRAZING GUIDELINES

KEY ASSUMPTIONS

* Influences of livestock grazing must result in riparian restoration at a minimum of "near natural" rates. We recognize that some environmental effects are inherent with the presence of livestock. However, we believe that "near natural" rates of recovery can be provided if we limit environmental effects to those that do not carry through to the next year, thereby avoiding cumulative, negative effects.

* Adverse affect to aquatic habitat associated with livestock grazing can be avoided, and riparian restoration provided by controlling:

  - season of use (tied to plant phenology and soil characteristics rather than calendar dates); and

  - amount of use.

* Providing for the health, form and function of riparian systems should remain the focus of management efforts.

* Stream gradient, inherent stability characteristics, potential vegetative communities, and type of degradation (i.e., vegetation vs. bank/channel characteristics) are important factors in determining restoration potential and guidelines that will lead to restoration.

* Guidelines for developing allotment specific prescriptions can be identified at the programmatic level. However, in general, the prescriptions themselves must be developed to fit "on-the-ground" conditions within the context of those guidelines.

* In some definable cases, avoiding adverse affects can only be accomplished by suspending livestock grazing. These cases include problems related to ecological status.

* Effective monitoring using specific measurement approaches, as well as administration are essential.

PROGRAMMATIC GUIDELINES FOR LIVESTOCK GRAZING

As noted in the assumptions above, the goals, or desired outcomes of management efforts provide the foundation for the recommended programmatic livestock grazing guidelines. The guidelines and resulting site specific prescriptions are of value only to the extent they contribute to meeting these goals. The Environmental Assessment for PACFISH interim direction provides suitable riparian goals for the land management agencies (See PACFISH EA, APPENDIX, pages C-3 and C-4). All management activities implemented, including non-livestock related activities, should contribute to accomplishment of these goals.

Where these goals are met, the following on-the-ground attributes will be evident (See BLM Technical Note 1737-9, Process for Assessing Proper Functioning Condition):

(1) Floodplains are inundated by relatively frequent events (i.e., 1-3 years).

(2) Stream sinuosity, width/depth ratio, and pool frequency reflect the capabilities of the setting (i.e., landform, geology, and bioclimatic region).

(3) Lateral stream movement is associated with natural sinuosity (i.e., streambank stability reflects the inherent capabilities of the setting).

(4) The overall system is vertically stable.

(5) Streambank morphology reflects the inherent capabilities of the ecological setting.

(6) Upland watershed conditions within the allotment are not contributing to degradation of riparian habitation conservation areas.

(7) Riparian vegetation characteristics:

- diverse age structure for woody species (where such species are a part of the natural system);
- plants exhibit high vigor;
- species present indicate maintenance of riparian soil moisture;
- streambank vegetation protects stream banks and dissipates energy during high flows (i.e., consider community type composition, rooting characteristics, and plant density); and
- provide an adequate source of coarse and/or large woody debris (where such debris is a part of the natural system).

MANAGEMENT CONSIDERATIONS

Based on the key assumptions previously outlined, the following guidelines are recommended for use in modifying applicable allotment management plans/annual operating plans/project decision documents/instructions to permitees to provide a high degree of assurance that objectives for conservation and restoration of anadromous fish habitat will be met.

These recommendations do not specifically address "priorities" for taking action. Taking action to conserve Columbia River Anadromous Fish is not optional. However, we believe priorities can be identified where there are insufficient resources to "do it all." Those priorities are as follows:

1) Maintain or improve conditions, where the criteria for "late seral" ecological status are met or exceeded (i.e., it is easier to protect healthy riparian systems than restore degraded ones).

2) Adjust management practices, where the criteria for "mid-seral" ecological status are met but the trend is static or downward. This is especially important, where vegetative factors are primarily responsible for the "fair" rating (i.e., making adjustments at this stage is likely to prevent stream bank/channel damage of a lasting nature).

3) Adjustments in management practices, where the criteria for "early seral" ecological status are met, and primarily tied to deteriorated stream bank/channel conditions (especially in cases of severe channel

downcutting where channel evolution has not re-created a floodplain), may contribute little to the recovery of the system in the near term.

RECOMMENDATIONS

* Continue current grazing prescriptions in pastures/allotments where ecological status is "late seral" (or better) based on either riparian vegetation or stream bank/channel conditions. Ensure residual herbaceous vegetation heights of at least 6 inches, and that no "condition thresholds" are exceeded. (See Key Definitions - Residual Herbaceous Vegetation Heights)

* Where ecological condition is "mid-seral," limit grazing in pastures/allotments to provide at least 6 inches of residual herbaceous vegetation and to ensure that no "condition thresholds" are exceeded. For moderate and low gradient (i.e., Rosgen "B" and "C" channel types) channels, with substrates composed of medium to fine easily eroded materials, also limit use to early season grazing to provide for recovery of stream bank/channel characteristics. (See key definitions--early season grazing.)

* In pastures/allotments where ecological condition is "early seral", the following is strongly recommended:

  In moderate and low gradient (i.e., Rosgen "B" and "C" channel types) channels, with substrates composed of medium to fine easily eroded materials consider rest.

  - In all moderate to high gradient stream systems (Rosgen "A" and "B" type channels) with coarse substrate materials that provide inherent stability, whose ecological status rating of poor is tied entirely to vegetation characteristics, grazing may be permitted if limited to early season use, residual herbaceous vegetation heights of at least 6 inches are met, and no "condition thresholds" are exceeded.

* Where early season grazing, as prescribed above, would result in adverse affects or is impractical mid- or late-season grazing may be alternatives. However, residual herbaceous vegetation requirements would still have to be met and no "condition thresholds" could be exceeded.

* Appropriate "condition thresholds" will be monitored in all pastures/allotments. Results are to be reported on an annual basis, and appropriate adjustments made to the annual operating plans. (See likely consequences of implementation of this recommendation in the following section.)

KEY DEFINITIONS

Condition Thresholds: A number of indicators of impending impacts that would carry-over to the next years would be monitored during the period of use and act as "triggers" to prevent damage. These should not be exceeded anytime during the grazing season. The recommended triggers and associated threshold values are as indicated below:

New bank alteration: bank instability that becomes evident after livestock grazing is initiated in a pasture/allotment in a given year. This assumes that early season use occurred following peak flows, when most of the

additional bank damage can be tied to land use activities. The recommended threshold is 5% of the lineal bank distance (includes both sides of the stream).

Riparian area alteration: two measures of riparian area alteration are proposed. Each keys on areas away from stream banks that are good early indicators of impending riparian damage. The first relates to use of "riparian islands" - those portions of riparian areas slightly higher and drier than the rest of the riparian area. These are often dominated by Kentucky bluegrass. The recommended threshold is 25% of the areas with visible trampled soils or a vegetation height of 2 inches, which ever is reached first.

The second measure relates to livestock use of "riparian sinks" - those portions of riparian areas slightly lower and more moist than the rest of the riparian area. These are often dominated by carex species. The recommended threshold is utilization in excess of a vegetation height of 3 inches.

Riparian "island" and "sinks" are not significant components of all riparian areas. Generally only one of these features would be used as an indicator of impending riparian damage (i.e., the one that represents a significant component of the riparian area away for the stream side and/or which first shows signs of damage).

Woody vegetation utilization: proposed limitations on season and amount of use, suggest that woody vegetation utilization would seldom be of concern. Monitoring of this feature would generally be limited to those circumstances where the prescription calls for mid- or late-grazing or where there is a documented problem with woody vegetation utilization. The recommended threshold is 30% of the current year's growth, measured as incidence of use.

Early Season Grazing: Early season grazing is defined in terms of the phenology of the vegetation. Early season grazing is limited to that period where upland vegetation is green but not drying. It typically begins about the second to third leaf stage and ends between boot and flowering of perennial upland bunch grasses. Caution should be used to avoid soil compaction and bank alteration from physical damage that can occur in some settings with s early season grazing.

Ecological Status: Al Winward, in Clary and Webster (1989), defined "ecological status" as a measure of the degree of similarity between current vegetation and potential vegetation for a given riparian area. Our definition of "ecological status" adds to Winward's definition, recognizing the importance of stream bank and channel features. Definitions follow for each of the three condition categories:

Early Seral (Non-functioning)*

- Percent similarity of riparian vegetation to the potential natural community/composition $\leq$ 25%; or,

- Stream bank/channel condition rating "poor." (See following rating system for rating stream bank/channel conditions.)

Mid-Seral (Functioning at risk)*

- Percent similarity of riparian vegetation to the potential natural community/composition 26-50% or better; and

- Stream bank/channel condition rating of at least "fair."

Late Seral (Properly functioning)*

- Percent similarity of riparian vegetation to the potential natural community/composition ≥ 50%; and,

- Stream bank/channel condition rating "good" or better.

* If similarity of riparian vegetation information is lacking or cannot be readily obtained, a similar vegetation rating methodology such as BLM Technical Note 1737-9 (functional rating) can be used.

Greenline: That specific area on or near the waters edge where a more or less continuous cover of perennial vegetation is encountered. Natural plant species forming the greenline are composed primarily of large, hydric species such as beaked sedge, Nebraska sedge, bluejoint reedgrass, or other especially strong rooted species capable of buffering the forces of water at the bankfull discharge level. Disturbance activities, such as overgrazing or trampling by animals or people, result in changes to shallow rooted species such as Kentucky bluegrass, which have a reduced ability to buffer water forces.

Late Season Grazing: Late season grazing generally begins after sugar storage in woody vegetation is complete and leaf fall has started. Upland plant seeds have shattered and mean air temperatures begin to cool.

Near Natural Rate of Recovery: Synonymous with PACFISH requirement not to "retard" or "measurably slow" recovery of degraded riparian features. Further defined in these recommendations within the context of effects that "carry over to the next year." Any effect that carrys over to the next years is likely to result in cumulative negative effects, and measurably slow recovery of degraded riparian features.

Residual Herbaceous Vegetation Height: Residual herbaceous vegetation height, measured at the end of the growing or grazing season (which ever occurs latest), is used as an indicator of a systems ability to withstand erosive stream flows, filter sediment and build stream banks. Residual herbaceous vegetation height measurements are to be taken on those hydric species along the greenline with the capability to buffer water forces. (See above discussion of "greenline.")

Riparian Capability Groups: Winward (1992) has defined bank stability potential based on percent stream gradient and substrate classes (Winward et. al., 1992). It is used in conjunction with the channel condition rating to determine ecological status.

Stream Bank/Channel Condition Rating: One of two ratings used to determine ecological status for riparian areas (the other rating evaluates vegetation composition). The following key is used:

Stream Bank Sub-Rating:

___ Meets or exceeds the expected bank stability (based on Riparian Capability Groups). (3 points)

___ Is below expected bank stability by 5% or less. (2 points)

___ Is below expected bank stability by more than 5%. (1 point)

NOTE: Where channel type information is lacking, the following stream bank sub-rating may be applied as an alternative.

___ Meets or exceed PACFISH standards for bank stability and lower bank angle. (3 points)

___ Meets or exceed PACFISH standards for bank stability or lower bank angle. (2 points)

___ Does not meet PACFISH standards for bank stability or lower bank angle. (1 point)

Stream Channel Sub-Rating:

___ Meets or exceeds PACFISH standards for temperature,* pool frequency, and width/depth ratio. (3 points)

___ Meets or exceeds PACFISH standards for temperature,* and pool frequency, or width/depth ratio. (2 points)

___ Does not meet PACFISH standards for temperature, * pool frequency, or width/depth ratio. (1 point)

Total Stream Bank/Channel Condition Rating:

___ Where: 6 = Excellent
5 = Good
4 = Fair
≤3 = Poor

*Consider temperature only where livestock grazing is likely to be a contributing factor to maximum stream temperatures.

ENCLOSURE C

5/3/95
GNH/RW

ONGOING ACTIVITY SCREENING - PACFISH
NON-LISTED ANADROMOUS FISH

Introduction

PACFISH requires that ongoing activities (projects), outside the area of listed anadromous fish, within the area covered by the strategy be screened to determine if ongoing actions or groups of actions pose a unacceptable risk to non-listed anadromous fish. This screen is to be completed by July 1, 1995. If an "unacceptable risk" determination is made, interim standards and guidelines would be applied to avoid an unacceptable risk. For those activities that rank as "high risk," modifications will be made prior to the action continuing. Ongoing projects, considered not to pose an unacceptable risk will be allowed to continue, during the interim period, under the direction that was in effect at the time of project approval, even if such projects are not fully in compliance with PACFISH Standards, guidelines and other provisions of the strategy.

This activity is intended to gauge the effectiveness of ongoing Federal actions in maintaining the quality and quantity of anadromous habitat. It is accomplished by reviewing individual or groups of like activities against a series of questions. The process will rely on existing information and the use of professional judgement. The review is to be accomplished by an Interdisciplinary Team, with final results and risk determinations made by a journey level fisheries biologist and reviewed by a line officer.

Federal actions are defined (FSM 2670 and 40 CFR 1508.18) as any action authorized, funded, or carried out by a Federal agency. Ongoing Federal actions are defined as those actions that, prior to the decision notice for PACFISH, have been implemented, or have contracts awarded or permits issued.

For purposes of this screen these actions include such categories as grazing permits and AOP's, timber sales, road and trail maintenance, mining activities, and special use permits which are being reissued or which have an annual operation plan. Other actions such as management of dispersed recreation activities, water diversions, and special use permits which do not have an annual operating plan should be included if there is a potential adverse impact.

An additional page (Supplemental information) is included to identify conditions or non-Federal actions not addressed but which may be causing significant adverse effects to anadromous habitat or populations. This information will be useful in identifying and prioritizing future restoration opportunities, but will not be used to determine unacceptable risk.

ONGOING ACTIVITY SCREENING - PACFISH
NON-LISTED ANADROMOUS FISH

Forest/BLM Unit:_____

Watershed being evaluated:_____

Basin Name:_____

Description of Ongoing Actions or Group of Actions that are being tested against screens:_____
_____

Fisheries Biologist Performing Evaluation:_____

Telephone Number:_____ **Date:**_____

CHECKLIST

Respond with a Y (Yes) or N (No) to each component of the following question. Provide a brief rationale for responses, (i.e., Cite the applicable references to support your response. In the absence of data, document the professional judgement that supports the response).

1. Is it probable or foreseeable that the ongoing actions or group of ongoing actions would affect any of the following features of habitat (i.e., a yes to any element of this question may likely result in a positive response to the second question).

Migration, Spawning and Rearing Habitats

_____ Water quality (e.g., chemical, suspended sediment, temperature)

Rationale:_____

_____ **Water quantity (i.e., magnitude, duration, timing of high/low flows)**

Rationale:_____

_____ **Juvenile or adult migration and passage**

Rationale:_____

_____ Quantity or quality of spawning habitat

Rationale:_____

_____ Quantity or quality of rearing habitat

Rationale:_____

_____ Riparian vegetation (does the action degrade existing conditions)

Rationale:_____

_____ Riparian vegetation (does the action retard recovery of vegetation)

Rationale:_____
_____
_____
_____

_____ Harassment of fish (including the results of increased human access) or physical disturbance of redds.

Rationale:_____
_____
_____
_____

2. It is probable or foreseeable that any of the adverse impacts identified in step 1, would be of sufficient magnitude to result in an unacceptable risk (likely to contribute to the need for listing of an anadromous fish population). A determination of an "Unacceptable Risk" will be made for any ongoing action, or group of actions, that result in a positive response to the element in question 2. Note: An adverse impact to one or more of the habitat elements evaluated in step 1 may not result in a positive response to question 2.

_____ Reduced anadromous fish growth or survival (includes increased mortality, reduced growth of fitness, reduced reproductive success, etc.)

Rationale:_____
_____
_____
_____

3. Use the following matrix to determine a relative priority for corrective action based on overall risk.

Relative Magnitude (Degree/Extent of Impacts)	Relative Probability of Impact Occurring ------->		
	High	Med	Low
High	H	H	M
Med	H	M	L
Low	M	L	L

NOTE: If "At Risk" populations are affected, the relative rating will be increased one category for Med or Low ratings (for example, a Med rating would be increased to High).

The following list of projects has been assessed and determined to have a high (H), moderate (M), or low (L) risk of effecting anadromous habitat or populations.

HIGH RISK	MODERATE RISK	LOW RISK
_____	_____	_____
_____	_____	_____
_____	_____	_____

Prepared by:

_____ _____

Signature of Fisheries Biologist Date

Reviewed and Concurred with:

_____ _____

Forest Fisheries Biologist Date

United States Department of Agriculture | Forest Service | R-6

Reply to: 2670 | Date: August 14, 1995

Subject: PACFISH Grazing Guidelines Revision

To: PACFISH Forest Supervisors

Enclosed is a revision of Enclosure B - Recommended Livestock Grazing Guidelines, sent to you in a memo dated May 24, 1995, providing feedback to questions raised at the PACFISH Implementation Workshops. Please replace the original Enclosure B with this revision dated July 31, 1995. It should be understood that this revision does not alter the intent or intended implementation of the subject guidelines as originally written but rather attempts to further clarify them to avoid possible misinterpretation.

If you have any questions, please contact Ron Wiley (503-952-6418), Wayne Elmore (503-447-4115), or Don Nelson (503-326-5917).

/s/Gordon Haugen
GORDON HAUGEN
Columbia River
Basin/PACFISH Coordinator

Enclosure

ENCLOSURE B

RECOMMENDED LIVESTOCK GRAZING GUIDELINES
(Rev. 7/31/95)

KEY ASSUMPTIONS

* Influences of livestock grazing must result in riparian restoration at a minimum of "near natural" rates. We recognize that some environmental effects are inherent with the presence of livestock. However, we believe that "near natural" rates of recovery can be provided if we limit environmental effects to those that do not carry through to the next year, thereby avoiding cumulative, negative effects.

* Adverse affect to aquatic habitat associated with livestock grazing can be avoided, and riparian restoration provided by controlling:

  - season of use (tied to plant phenology and soil characteristics rather than calendar dates); and

  - amount of use.

* Providing for the health, form and function of riparian systems should remain the focus of management efforts.

* Stream gradient, inherent stability characteristics, potential vegetative communities, and type of degradation (i.e., vegetation vs. bank/channel characteristics) are important factors in determining restoration potential and guidelines that will lead to restoration.

* Guidelines for developing allotment specific prescriptions can be identified at the programmatic level. However, in general, the prescriptions themselves must be developed to fit "on-the-ground" conditions within the context of those guidelines.

* In some definable cases, avoiding adverse affects can only be accomplished by suspending livestock grazing. These cases include problems related to ecological status.

* Effective monitoring using specific measurement approaches, as well as administration, are essential.

PROGRAMMATIC GUIDELINES FOR LIVESTOCK GRAZING

As noted in the assumptions above, the goals, or desired outcomes of management efforts provide the foundation for the recommended programmatic livestock grazing guidelines. The guidelines and resulting site specific prescriptions are of value only to the extent they contribute to meeting these goals. The Environmental Assessment for PACFISH interim direction provides suitable riparian goals for the land management agencies (See PACFISH EA, APPENDIX, pages C-3 and C-4). All management activities implemented, including non-livestock related activities, should contribute to accomplishment of these goals.

Where these goals are met, the following on-the-ground attributes will be evident (See BLM Technical Reference 1737-9, Process for Assessing Proper Functioning Condition):

(1) Floodplains are inundated by relatively frequent events (i.e., 1-3 years).

(2) Stream sinuosity, width/depth ratio, and pool frequency reflect the capabilities of the setting (i.e., landform, geology, and bioclimatic region).

(3) Lateral stream movement is associated with natural sinuosity (i.e., streambank stability reflects the inherent capabilities of the setting).

(4) The overall system is vertically stable.

(5) Streambank morphology reflects the inherent capabilities of the ecological setting.

(6) Upland watershed conditions within the allotment are not contributing to degradation of riparian habitat conservation areas.

(7) Riparian vegetation characteristics:

- diverse age structure for woody species (where such species are a part of the natural system);
- plants exhibit high vigor;
- species present indicate maintenance of riparian soil moisture;
- streambank vegetation protects stream banks and dissipates energy during high flows (i.e., consider community type composition, rooting characteristics, and plant density); and
- provide an adequate source of coarse and/or large woody debris (where such debris is a part of the natural system).

MANAGEMENT CONSIDERATIONS

Based on the key assumptions previously outlined, the following guidelines are recommended for use in modifying applicable allotment management plans/annual operating plans/project decision documents/instructions to permitees to provide a high degree of assurance that objectives for conservation and restoration of anadromous fish habitat will be met.

These recommendations do not specifically address "priorities" for taking action. Taking action to conserve Columbia River Anadromous Fish is not optional. However, we believe priorities can be identified where there are insufficient resources to "do it all." Those priorities are as follows:

1) Maintain or improve conditions, where the criteria for "late seral" ecological status are met or exceeded (i.e., it is easier to protect healthy riparian systems than restore degraded ones).

2) Adjust management practices, where the criteria for "mid-seral" ecological status are met but the trend is static or downward. This is especially important, where vegetative factors are primarily responsible for the mid-seral rating (i.e., making adjustments at this stage is likely to prevent stream bank/channel damage of a lasting nature).

3) Adjustments in management practices, where the criteria for "early seral" ecological status are met, and primarily tied to deteriorated stream bank/channel conditions (especially in cases of severe channel downcutting where channel evolution has not re-created a floodplain), may contribute little to the recovery of the system in the near term.

RECOMMENDATIONS

* Continue current grazing prescriptions in pastures/allotments where ecological status is "late seral" (or better) based on either riparian vegetation or stream bank/channel conditions. Ensure residual herbaceous vegetation heights of at least 4 to 6 inches, and that no "condition thresholds" are exceeded. (See Key Definitions - Ecological Status and Residual Herbaceous Vegetation Heights)

* Where ecological status is "mid-seral," limit grazing in pastures/allotments to provide at least 6 inches of residual herbaceous vegetation and to ensure that no "condition thresholds" are exceeded. For moderate and low gradient (i.e., Rosgen "B" and "C" channel types) channels, with substrates composed of medium to fine easily eroded materials, also limit use to early season grazing to provide for recovery of stream bank/channel characteristics. (See Key Definitions - Early Season Grazing)

* In pastures/allotments where ecological status is "early seral", the following is strongly recommended:

  - In moderate and low gradient (i.e., Rosgen "B" and "C" channel types) channels, with substrates composed of medium to fine easily eroded materials, consider rest.

  - In all moderate to high gradient stream systems (Rosgen "A" and "B" type channels) with coarse substrate materials that provide inherent stability, whose ecological status rating of early seral is tied entirely to vegetation characteristics, grazing may be permitted if limited to early season use, residual herbaceous vegetation heights of at least 6 inches are met, and no "condition thresholds" are exceeded.

* Where early season grazing, as prescribed above, would result in adverse affects or is impractical, mid- or late-season grazing may be alternatives. However, residual herbaceous vegetation requirements would still have to be met and no "condition thresholds" could be exceeded.

* Appropriate "condition thresholds" will be monitored in all pastures/allotments. Results are to be reported on an annual basis, and appropriate adjustments made to the annual operating plans. (See likely consequences of implementation of this recommendation in the following section.)

KEY DEFINITIONS

Condition Thresholds: A number of indicators of impending impacts that would carry over to the next year would be monitored during the period of use and act as "triggers" to prevent damage. These should not be exceeded anytime during the grazing season. The recommended triggers and associated threshold values are as indicated below:

New bank alteration: bank instability that becomes evident after livestock grazing is initiated in a pasture/allotment in a given year. This assumes that early season use occurred following peak flows, when most of the additional bank damage can be tied to land use activities. The recommended threshold is 5% of the lineal bank distance (includes both sides of the stream).

Riparian area alteration: two measures of riparian area alteration are proposed. Each keys on areas away from stream banks that are good early indicators of impending riparian damage. The first relates to use of "riparian islands" - those portions of riparian areas slightly higher and drier than the rest of the riparian area. These are often dominated by Kentucky bluegrass. The recommended threshold is 25% of the areas with visible trampled soils or a vegetation height of 2 inches, which ever is reached first.

The second measure relates to livestock use of "riparian sinks" - those portions of riparian areas slightly lower and more moist than the rest of the riparian area. These are often dominated by carex species. The recommended threshold is utilization in excess of a vegetation height of 3 inches.

Riparian "island" and "sinks" are not significant components of all riparian areas. Generally only one of these features would be used as an indicator of impending riparian damage (i.e., the one that represents a significant component of the riparian area away from the stream side and/or which first shows signs of damage).

Woody vegetation utilization: proposed limitations on season and amount of use, suggest that woody vegetation utilization would seldom be of concern. Monitoring of this feature would generally be limited to those circumstances where the prescription calls for mid- or late-season grazing or where there is a documented problem with woody vegetation utilization. The recommended threshold is 30% of the current year's growth, measured as incidence of use.

Early Season Grazing: Early season grazing is defined in terms of the phenology of the vegetation. Early season grazing is limited to that period where upland vegetation is green but not drying. It typically begins about the second to third leaf stage and ends between boot and flowering of perennial upland bunch grasses. Caution should be used to avoid soil compaction and bank alteration from physical damage that can occur in some settings with early season grazing.

Ecological Status: Al Winward, in Clary and Webster (1989), defined "ecological status" as a measure of the degree of similarity between current vegetation and potential vegetation for a given riparian area. Our definition of "ecological status" adds to Winward's definition, recognizing the importance of stream bank and channel features. Definitions follow for each of the categories:

Early Seral *

- Percent similarity of riparian vegetation to the potential natural community/composition ≤ 25%; or,

- Stream bank/channel condition rating "poor".

Mid-Seral *

- Percent similarity of riparian vegetation to the potential natural community/composition 26-50% or better; and,

- Stream bank/channel condition rating of at least "fair".

Late Seral *

- Percent similarity of riparian vegetation to the potential natural community/composition ≥ 50%; and,

- Stream bank/channel condition rating "good" or better.

* If similarity of riparian vegetation information is lacking or cannot be readily obtained, use BLM Technical Reference 1737-9, Process for Assessing Proper Functioning Condition, or other rating systems. In using the previously mentioned technical reference, the following approximate crosswalk may be applied to relate functioning condition and ecological status:

- Proper Functioning Condition - continue current management if monitoring data supports or use recommendations for late seral.

- Functional-At Risk, upward trend - continue current management if monitoring data supports or use recommendations for mid-seral.

- Functional-At Risk, static trend - use recommendations for mid-seral or early seral depending on site specific conditions.

- Functional-At Risk, downward trend; or,

- Non-Functional, use recommendations for early seral.

Greenline: That specific area on or near the waters edge where a more or less continuous cover of perennial vegetation is encountered. Natural plant species forming the greenline are composed primarily of large, hydric species such as beaked sedge, Nebraska sedge, bluejoint reedgrass, or other especially strong rooted species capable of buffering the forces of water at the bankfull discharge level. Disturbance activities, such as overgrazing or trampling by animals or people, result in changes to shallow rooted species such as Kentucky bluegrass, which have a reduced ability to buffer water forces.

Late Season Grazing: Late season grazing generally begins after sugar storage in woody vegetation is complete and leaf fall has started. Upland plant seeds have shattered and mean air temperatures begin to cool.

Near Natural Rate of Recovery: Synonymous with PACFISH requirement not to "retard" or "measurably slow" recovery of degraded riparian features. Further defined in these recommendations within the context of effects that "carry over to the next year." Any effect that carries over to the next year is likely to result in cumulative negative effects, and measurably slow recovery of degraded riparian features.

Residual Herbaceous Vegetation Height: Residual herbaceous vegetation height, measured at the end of the growing or grazing season (which ever occurs latest), is used as an indicator of a system's ability to withstand erosive stream flows, filter sediment and build stream banks. Residual herbaceous vegetation height measurements are to be taken on those hydric species along the greenline with the capability to buffer water forces. (See above discussion of "greenline.")

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Oregon State Office
P.O. Box 2965
Portland, Oregon 97208

In Reply Refer to:
6700 (931)

SEP 21 1995

Information Bulletin No. OR-95- 499

To: District Managers: Vale, Spokane, Prineville, Ukiah, Bakersfield, and Coeur D'Alene

From: State Director, Oregon/Washington

Subject: PACFISH Grazing Recommendations Revision

Attached is a revision of Enclosure B - Recommended Livestock Grazing Guidelines which was sent to you as part of an interagency memorandum (BLM/Forest Service) dated May 24, 1995, providing feedback to questions raised at the PACFISH Implementation Workshops. Please replace the original Attachment B with this revision. It should be understood that this revision does not alter the intent or intended implementation of the subject guidelines as originally written, but rather attempts to further clarify them so as to avoid possible misinterpretation.

If you have any questions, please contact Ron Wiley (503-952-6418) or Wayne Elmore (503-447-4115).

Michael R Crouse
MICHAEL R. CROUSE ACTING
Deputy State Director for Resource
Planning, Use and Protection

1 Attachment
1 - Encl. B - Recommended Livestock Grazing Guidelines

Distribution
WO-330 (Room 204 LS) - 1
OR-930 - 1
OR-931 - 1

ENCLOSURE B - RECOMMENDED LIVESTOCK GRAZING GUIDELINES FOR USE WITHIN THE RANGE OF ANADROMY - PACFISH
(Rev. 7\31\95)

KEY ASSUMPTIONS

* Influences of livestock grazing must result in riparian restoration at a minimum of "near natural" rates. We recognize that some environmental effects are inherent with the presence of livestock. However, we believe that "near natural" rates of recovery can be provided if we limit environmental effects to those that do not carry through to the next year, thereby avoiding cumulative, negative effects.

* Adverse affects to aquatic habitat associated with livestock grazing can be avoided, and riparian restoration provided by controlling:

  - season of use (tied to plant phenology and soil characteristics rather than calendar dates); and

  - amount of use.

* Providing for the health, form, and function of riparian systems should remain the focus of management efforts.

* Stream gradient, inherent stability characteristics, potential vegetative communities, and type of degradation (i.e., vegetation vs. bank/channel characteristics) are important factors in determining restoration potential and the guidelines that will lead to restoration.

* Guidelines for developing allotment-specific prescriptions can be identified at the programmatic level. However, in general, the prescriptions themselves must be developed to fit "on-the-ground" conditions within the context of those guidelines.

* In some definable cases, avoiding adverse effects can only be accomplished by suspending livestock grazing. These cases include problems related to ecological status.

* Effective monitoring using specific measurement approaches, as well as administration, are essential.

PROGRAMMATIC GUIDELINES FOR LIVESTOCK GRAZING

As noted in the assumptions above, the goals, or the desired outcomes of management efforts, provide the foundation for the recommended programmatic livestock grazing guidelines. The guidelines and resulting site-specific prescriptions are of value only to the extent they contribute to meeting these goals. The Environmental Assessment (EA) for PACFISH interim direction provides suitable riparian goals for the land management

agencies (see PACFISH EA, APPENDIX, pp. C-3 and C-4). All management activities implemented, including non-livestock related activities, should contribute to accomplishment of these goals.

Where these goals are met, the following on-the-ground attributes will be evident (see BLM Technical Reference 1737-9, Process for Assessing Proper Functioning Condition):

(1) Floodplains are inundated by relatively frequent events (i.e., one-to-three years).

(2) Stream sinuosity, width/depth ratio, and pool frequency reflect the capabilities of the setting (i.e., landform, geology, and bioclimatic region).

(3) Lateral stream movement is associated with natural sinuosity (i.e., streambank stability reflects the inherent capabilities of the setting).

(4) The overall system is vertically stable.

(5) Streambank morphology reflects the inherent capabilities of the ecological setting.

(6) Upland watershed conditions within the allotment are not contributing to degradation of riparian habitat conservation areas.

(7) Riparian vegetation characteristics:

- diverse age structure for woody species (where such species are a part of the natural system);
- plants exhibit high vigor;
- species present indicate maintenance of riparian soil moisture;
- streambank vegetation protects streambanks and dissipates energy during high flows (i.e., consider community-type composition, rooting characteristics, and plant density); and
- provide an adequate source of coarse and/or large woody debris (where such debris is a part of the natural system).

MANAGEMENT CONSIDERATIONS

Based on the key assumptions previously outlined, the following guidelines are recommended for use in modifying applicable allotment management plans/annual operating plans/project decision documents/instructions to permittees to provide a high degree of assurance that objectives for conservation and restoration of anadromous fish habitat will be met.

These recommendations do not specifically address "priorities" for taking action. Taking action to conserve Columbia River Anadromous Fish is not optional. However, we believe priorities can be identified where there are insufficient resources to "do it all." Those priorities are as follows:

(1) Maintain or improve conditions, where the criteria for "late seral" ecological status are met or exceeded (i.e., it is easier to protect healthy riparian systems than restore degraded ones).

(2) Adjust management practices, where the criteria for "mid-seral" ecological status are met but the trend is static or downward. This is especially important where vegetative factors are primarily responsible for the mid-seral rating (i.e., making adjustments at this stage is likely to prevent streambank/channel damage of a lasting nature).

(3) Adjustments in management practices, where the criteria for "early seral" ecological status are met, and primarily tied to deteriorated streambank/channel conditions (especially in cases of severe channel downcutting where channel evolution has not recreated a floodplain) may contribute little to the recovery of the system in the near term.

RECOMMENDATIONS

* Continue current grazing prescriptions in pastures/allotments where ecological status is "late seral" (or better), based on either riparian vegetation or streambank/channel conditions. Ensure residual herbaceous vegetation heights of at least four-to-six inches, and that no "condition thresholds" are exceeded. (See Key Definitions - Residual Herbaceous Vegetation Heights)

* Where ecological status is "mid-seral," limit grazing in pastures/allotments to provide at least six inches of residual herbaceous vegetation and to ensure that no "condition thresholds" are exceeded. For moderate and low gradient (i.e., Rosgen "B" and "C" channel types) channels, with substrates composed of medium-to-fine easily eroded materials, also limit use to early season grazing to provide for the recovery of streambank/channel characteristics. (See Key Definitions - Early Season Grazing.)

* In pastures/allotments where ecological status is "early seral," the following is strongly recommended:

  - In moderate and low gradient (i.e., Rosgen "B" and "C" channel types) channels with substrates composed of medium-to-fine easily eroded materials, consider rest.

  - In all moderate-to-high gradient stream systems (Rosgen "A" and "B" type channels) with coarse substrate materials that provide inherent stability, whose ecological status rating of early seral is tied entirely to vegetation characteristics, grazing may be permitted if limited to early season use,

residual herbaceous vegetation heights of at least six inches are met, and no "condition thresholds" are exceeded.

* Where early season grazing, as prescribed above, would result in adverse effects or is impractical, mid- or late-season grazing may be alternatives. However, residual herbaceous vegetation requirements would still have to be met, and no "condition thresholds" could be exceeded.

* Appropriate "condition thresholds" will be monitored in all pastures/allotments. Results are to be reported on an annual basis and the appropriate adjustments made to the annual operating plans. (See likely consequences of implementation of this recommendation in the following section.)

KEY DEFINITIONS

Condition Thresholds: A number of indicators of impending impacts that would carry-over to the next years would be monitored during the period of use and act as "triggers" to prevent damage. These should not be exceeded at any time during the grazing season. The recommended triggers and associated threshold values are as indicated below:

- **New bank alteration:** Bank instability that becomes evident after livestock grazing is initiated in a pasture/allotment in a given year. This assumes that early season use occurred following peak flows, when most of the additional bank damage can be tied to land use activities. The recommended threshold is 5 percent of the lineal bank distance (includes both sides of the stream).

- **Riparian area alteration:** Two measures of riparian area alteration are proposed. Each keys on areas away from streambanks that are good early indicators of impending riparian damage. The first relates to use of "riparian islands" - those portions of riparian areas slightly higher and drier than the rest of the riparian area. These are often dominated by Kentucky bluegrass. The recommended threshold is 25 percent of the areas with visible trampled soils or a vegetation height of two inches, whichever is reached first.

  The second measure relates to livestock use of "riparian sinks" - those portions of riparian areas slightly lower and more moist than the rest of the riparian area. These are often dominated by carex species. The recommended threshold is utilization in excess of a vegetation height of three inches.

  Riparian "islands" and "sinks" are not significant components of all riparian areas. Generally, only one of these features would be used as an indicator of impending riparian damage (i.e., the one that represents a significant component of the riparian area away from the stream side and/or which first shows signs of damage).

- **Woody vegetation utilization:** Proposed limitations on season and amount of use suggest that woody vegetation utilization would seldom be of concern.

Monitoring of this feature would generally be limited to those circumstances where the prescription calls for mid- or late-season grazing, or where there is a documented problem with woody vegetation utilization. The recommended threshold is 30 percent of the current year's growth, measured as incidence of use.

Early Season Grazing: Early season grazing is defined in terms of the phenology of the vegetation. Early season grazing is limited to that period when upland vegetation is green but not drying. It typically begins about the second-to-third leaf stage and ends between boot and flowering of perennial upland bunch grasses. Caution should be used to avoid soil compaction and bank alteration from physical damage that can occur in some settings with early season grazing.

Ecological Status: Al Winward, in Clary and Webster (1989), defined "ecological status" as a measure of the degree of similarity between current vegetation and potential vegetation for a given riparian area. Our definition of "ecological status" adds to Winward's definition, recognizing the importance of streambank and channel features. Definitions follow for each of the three condition categories:

- **Early Seral ***

  Percent similarity of riparian vegetation to the potential natural community/composition less than 25 percent; or,

  Streambank/channel condition rating "poor." (See following rating system for rating streambank/channel conditions.)

- **Mid-Seral ***

  Percent similarity of riparian vegetation to the potential natural community/composition 26-50 percent or better; and

  Streambank/channel condition rating of at least "fair."

- **Late Seral ***

  Percent similarity of riparian vegetation to the potential natural community/composition greater than 50 percent; and,

  Streambank/channel condition rating "good" or better.

* If similarity of riparian vegetation information is lacking or cannot be readily obtained, use BLM Technical Reference 1737-9, Process for Assessing Proper Functioning Condition, or other rating system.

In using the previously mentioned technical reference, the following approximate crosswalk may be applied to relate functioning condition and ecological status:

- Proper Functioning Condition - Continue current management if supported by monitoring data or use recommendations for late seral.

- Functional-At-Risk, upward trend - Continue current management if supported by monitoring data or use recommendations for mid-seral.

- Functional-At-Risk, static trend - Use recommendations for mid-seral or early seral depending on site-specific conditions.

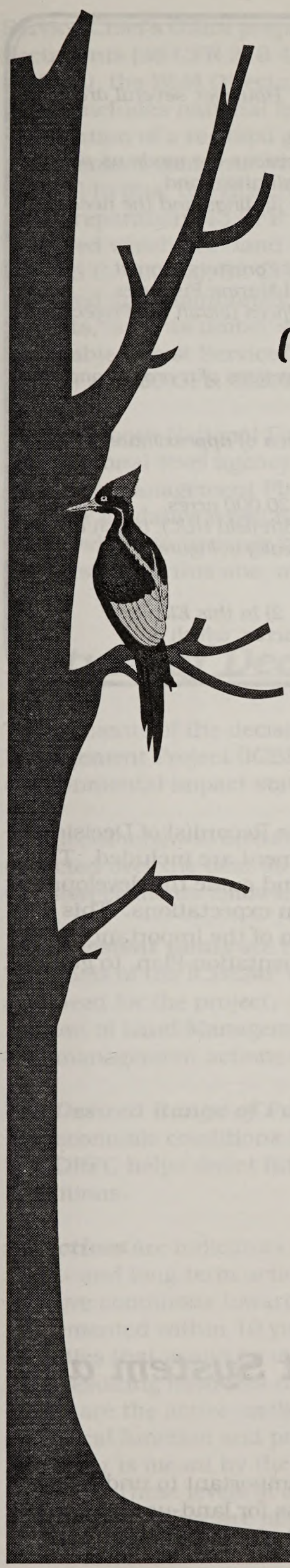
- Non-Functional, use recommendations for early seral.

Greenline: That specific area on or near the water's edge where a more or less continuous cover of perennial vegetation is encountered. Natural plant species forming the greenline are composed primarily of large, hydric species such as beaked sedge, Nebraska sedge, bluejoint reedgrass, or other especially strong rooted species capable of buffering the forces of water at the bankfull discharge level. Disturbance activities, such as overgrazing or trampling by animals or people, result in changes to shallow rooted species such as Kentucky bluegrass, which have a reduced ability to buffer water forces.

Late Season Grazing: Late season grazing generally begins after sugar storage in woody vegetation is complete and leaf fall has started. Upland plant seeds have shattered, and mean air temperatures begin to cool.

Near Natural Rate of Recovery: Synonymous with the PACFISH requirement not to "retard" or "measurably slow" recovery of degraded riparian features. Further defined in these recommendations within the context of effects that "carry over to the next year." Any effect that carries over to the next year is likely to result in cumulative negative effects and measurably slow recovery of degraded riparian features.

Residual Herbaceous Vegetation Height: Residual herbaceous vegetation height, measured at the end of the growing or grazing season (whichever occurs last), is used as an indicator of a system's ability to withstand erosive streamflows, filter sediment, and build streambanks. Residual herbaceous vegetation height measurements are to be taken on those hydric species along the greenline with the capability to buffer water forces. (See above discussion of "greenline.")



Appendix I Implementation Framework

(Comparable to Eastside Appendix 3-1)

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Key Terms Used in this Appendix

The EIS Glossary can be used to clarify most key terms used in this appendix. However, several are unique to, or important in this document and are included as follows:

Adaptive Management *- A type of natural resource management in which decisions are made as part of an on-going process. Adaptive management involves testing, monitoring, evaluation, and incorporating new knowledge into management approaches based on scientific findings and the needs of society. Results are used to modify management policy.*

Regional Executives *- A group of BLM State Directors, Forest Service Regional Foresters, Forest Service Research Station Directors, Fish and Wildlife Regional Director, National Marine Fisheries Service Regional Director, and EPA Regional Director representing the agency offices within the Project Area that provide guidance and direction.*

Monitoring *- A process of collecting information to evaluate whether or not objectives of a project and its mitigation plan are being realized.*

Subbasin *- Equivalent to a 4th-field Hydrologic Unit Code (HUC), a drainage area of approximately 800,000 to 1,000,000 acres.*

Subwatershed *- Equivalent to a 6th-field HUC, a drainage area of approximatley 20,000 acres. Hierarchically, subwatersheds (6th-field HUC) are contained within a watershed (5th-field HUC), which in turn is contained within a subbasin (4th-field HUC). This concept is shown graphically in Figure 2-1 in Chapter 2.*

Watershed *- 1) The region draining into a river, river system, or body of water. 2) In this EIS, a watershed also refers to a drainage area of approximately 50,000 to 100,000 acres, which is equivalent to a 5th-field HUC.*

Introduction

This appendix addresses implementation issues that will be finalized in the Record(s) of Decision (RODs). Processes for implementation, monitoring, and adaptive management are included. This appendix is not intended to be a plan but rather a framework to identify and guide the development work between Draft and Final EIS and to add clarity to the implementation expectations. This appendix is a start in the process, not a completed product. In recognition of the importance and focus needed, a team has been established to begin working on an Implementation Plan, to guide application of decisions made in the ROD(s).

This appendix is composed of four main sections:

- The Nature of Decisions;
- Implementation Process;
- Monitoring, Evaluation, and Adaptive Management Framework;
- Challenges to Implementation.

The Nature of Decisions

Nature of Planning on National Forest System and BLM-Administered Lands

In order to understand the decision(s) to be made based on this EIS, it is important to understand the Forest Service's and Bureau of Land Management's multi-stage process for land-use planning. Under the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, the Forest

Service Chief's Office prepares nation-wide Renewable Resources Assessment and Program documents (36 CFR 219.4(b)). Under the Federal Land Policy and Management Act of 1976 (FLPMA), the BLM Director provides guidance for the preparation of resource management plans, which includes national level policy (43 CFR 1610.1(a)). The next planning level involves preparation of a regional guide for each Forest Service Region to address "major issues and management concerns which need to be considered at the Regional level" (36 CFR 219.8(a)). Parallel to this, the BLM State Director provides State level guidance for resource management plan preparation (43 CFR 1610.1(a)). Next, individual National Forest/BLM land-use plans are prepared which are "land and resource management plans for units of the National Forest System" (16 U.S.C. 1604(a); 36 CFR 219.10 to 219.27) and "resource management plans [which are] prepared and maintained on a resource area basis" (43 CFR 1610.1(b)). Finally, individual projects, such as timber sales, are evaluated and may be approved only if they are consistent with applicable Forest Service/BLM land-use plans and applicable environmental standards (16 U.S.C. 1604(I) and 36 CFR 223.30) and (43 CFR 1610.5-3).

Plans for both National Forest System and BLM-administered lands are designed to be consistent with national-level agency policies and regulations. BLM plans at the project or activity level tier to Resource Management Plans or Management Framework Plans, which may be based on State Director guidance when needed. Forest Service project plans must be consistent with Forest Plans, which in turn are based on Regional Guides. When needed, larger scale multi-regional plans, such as this one, may be developed for issues that cross jurisdictional boundaries.

Nature of Decisions Expected in the ROD

The elements of the decisions to be made through the Interior Columbia Basin Ecosystem Management Project (ICBEMP) are described and explained in detail in Chapter 1 of the draft environmental impact statements (Draft EISs).

The decision(s) will include adoption of management goals, a desired range of future conditions expected over the next 50 to 100 years, objectives, and standards. An explanation of each of these decision elements follows:

Management Goals are broad general statements of intent that are not quantified or time specific. The goals of the ICBEMP were derived from consideration of the project charter and the purpose of and need for the project. In adopting these goals as part of the decision, the Forest Service and Bureau of Land Management will identify the general direction to be taken by subsequent planning and management actions.

The ***Desired Range of Future Conditions (DRFC)*** is a portrayal of the land, resource, or social and economic conditions that are expected to result in 50 to 100 years as objectives are achieved. The DRFC helps direct future management actions by providing a vision of these long-term conditions.

Objectives are indicators used to measure progress toward attainment of goals. They address short- and long-term actions taken to meet the goals. The objectives of the ICBEMP are expected to move conditions toward the desired range of future conditions described in Chapter 3 and to be implemented within 10 years. The Draft EISs include an estimation of the level of management activities that would be implemented on Forest Service- and BLM-administered lands in the project area resulting from this direction. (See Tables 3-6 and 3-7.) The activities displayed in these tables are the active methods that are most often anticipated and associated with restoration of ecological function and processes. (A more complete explanation of how the numbers were derived and what is meant by the various activities can be found in Appendix L in the section entitled *Ruleset*.) These levels of activities are estimates made to facilitate the evaluation of the alternatives. They are not targets or allocations.

Standards are required actions addressing how to achieve objectives. Standards can include additional processes that must be followed, or requirements to refrain from taking action in certain situations.

Decision(s) made by the agencies will provide a large-scale ecological context for Forest Service and BLM land-use plans. They will help clarify the relationship of agency activities to ecosystem capabilities and will help develop realistic expectations for the production of economic and social benefits. Most decisions will focus on regional and subregional issues. The decision(s) will establish desired landscape patterns, structure, and succession and disturbance regimes to move toward sustainable forest land, rangeland, aquatic, and riparian ecosystems. Decision(s) are expected to describe a consistent aquatic/riparian strategy, the needs for ecosystem analysis, and management emphasis. Decision(s) will also establish general direction for management of habitat for threatened or endangered species, species of concern to tribes, or communities of species that require management across broad landscapes to assure viability. Decision(s) described in the Record(s) of Decision will focus on those that have been challenging to address at the local level. Most implementation decisions will be made locally within the context of those described in the Record(s) of Decision.

After the Record(s) of Decision are issued, each administrative unit will need to ensure that it is complying with both the amendment adopted by the ROD(s) and remaining language in the original plan. In addition, refinement of direction applicable to individual units may be developed through subsequent plan amendments or revisions.

Relationship to Existing Plans, Policies and Decisions

Both the Forest Service and Bureau of Land Management land-use plans vary in their consistency with the different alternatives displayed in this EIS. Consequently, it is expected that the degree of change to individual plans as a result of the Record(s) of Decision will also vary from plan to plan. The amended plans will incorporate management goals and the desired range of future conditions over the next 50 to 100 years, will modify existing objectives or adopt new objectives to be used in measuring progress toward attainment of the management goals, and will identify standards to direct future management actions. In summary, this EIS will provide updated and broad regional direction, while individual Forest Service and BLM plans, as amended, will continue to provide more specific direction.

While the ROD will amend all existing land-use plans, it will not replace or supersede all of the decisions and direction in these plans. Where those plans already provide management direction and land allocations not superseded by the ROD(s) for the ICBEMP, those mid- or lower tier decisions will remain in effect. Examples would include protective management direction and land-use allocations for designated components of the Wild and Scenic River System, designated Research Natural Areas, National Historic Sites and Districts, or off-highway-vehicle play areas.

The Forest Service and BLM will continue to comply with existing laws and regulations and with longstanding agency policies such as those for management of special status species. The special status species policies for the BLM and Forest Service basically state that the agencies will manage such that special status species do not need to be listed as threatened or endangered under the Endangered Species Act.

Compliance with the National Environmental Policy Act (NEPA)

The EIS for this project provides the compliance with NEPA for the broad-scale decisions that will be made in the ROD. It does not replace the requirement to comply with NEPA for implementation

actions. The agencies will continue to prepare Environmental Assessments (EAs) and Environmental Impact Statements (EISs) as part of decision making and planning processes. These subsequent EISs and EAs will tier to the Upper Columbia River Basin (UCRB) or Eastside EIS.

Management Priorities

Management priorities are described in Chapter 1. In addition, management emphasis is described in Chapter 3 for each alternative. With the significant diversity of issues, resources, conditions, trends, and communities within the planning area, there is no simple solution to ambiguities or conflicts that may arise through implementation at the field level. The management priorities and emphasis outlined in this EIS and Record(s) of Decision will provide the context, framework, or umbrella for local decision making. Local managers need the flexibility to work within this umbrella to adapt priorities and emphasis to local conditions such that outcomes can be most effective.

In Chapter 1, three priorities are stated: protect ecosystems, restore deteriorated ecosystems, and provide multiple benefits for people within the capabilities of ecosystems. In Chapters 2 and 3, forest and range clusters are described. Within the clusters, priorities and opportunities are discussed. In addition, in Chapter 3, management emphasis is assigned by alternative and cluster to conserve, restore, produce, or a combination of these. These descriptions outline the framework and context to conduct management activities. While clusters represent areas with similar risks, opportunities, existing conditions, and management histories, they are not homogeneous and contain a variety of actual and potential conditions. While a management emphasis has been assigned for each cluster as a whole, the varying conditions within a cluster will require that management activities are selectively placed to create the optimum mix of restoration, conservation, and production. Placement of activities will be based upon local conditions as described during further analysis (See *Linking Broad-scale Decisions and Information to Finer Levels* in this appendix).

Clusters also contain parts of more than one administrative unit. Implementation will require a consistent approach among affected administrative units, and will be guided by four components: integrated risk analysis, spatial prioritization, additional analysis as described in the section entitled *Linking Broad-scale Decisions and Information to Finer Levels* in this appendix, and monitoring and evaluation.

An integrated risk analysis, conducted prior to the ROD, will examine relative risks to important components of the terrestrial, aquatic, and landscape processes as brought forward through the *Scientific Assessment*. This process will also consider the opportunities that are consistent with reducing risks; restoring areas important to terrestrial, aquatic, and landscape systems but currently not at their potential; and the provision of goods and services consistent with maintaining ecological integrity. It is expected that the combination of the integrated risk analysis and the theme of the alternatives will be used to identify subbasins where there is the greatest opportunity to jointly reduce overall ecological risk, and meet other societal needs. This is referred to as spatial prioritization.

Next, a process for using information from multiple scales to aid in decision making will be implemented as described in the section entitled *Linking Broad Scale Decisions and Information to Finer Levels*. This step-down process is designed to ensure that final commitments of actions prescribed to meet broad-scale goals and objectives are made only after considering local conditions. It will validate the risk determinations made as part of the spatial prioritization process, and facilitate the analysis of cumulative effects when individual project decisions are made.

Finally, implementation will include a feedback mechanism that will compile information about implementation, and aggregate it upward to determine if the cumulative results of implementation are as desired or expected. This monitoring process will examine whether existing conditions match those projected, and whether progress is being made toward achieving the desired conditions. It will include a determination of whether the levels of activities that were projected are

occurring, whether they are occurring in the expected locations, and how these findings relate to the projected effects of implementation. Monitoring may occur in conjunction with analysis done at any scale in the step-down process. (See *A Framework for Monitoring, Evaluation, and Adaptive Management* in this appendix).

Concerns may arise about possible conflicts between resource needs and people's needs. These are ultimately addressed at the local level, within the context of overall direction and priorities contained in the ROD(s). As a foundation, however, the Forest Service and BLM are obligated and committed to meeting the intent of existing laws, regulations and policies. Various Federal and State laws, such as the Clean Water Act, Clean Air Act, Endangered Species Act, Federal trust responsibilities, and the National Forest Management Act (NFMA), have minimum requirements or conditions (such as meeting the viability requirement of the NFMA, water temperature standards of the Clean Water Act, or emission standards from the Clean Air Act) that must be attained prior to or while conducting management activities. While these define the lower limits of the decision space, the upper limit is often bounded by the biological potential, or maximum capabilities of the land and resources. This then allows for a range of management options between the minimum legal requirements and the biological potential. Selection of a Preferred Alternative or action within that range of options can then be focused on social, economic, or special resource considerations. In general, after ensuring that legal requirements are satisfied, a combination of social, economic, and resource values will be greatest somewhere short of maximizing any one value, except where very limited opportunities, high risks, or rare and sensitive species or habitats exist.

Implementation Process

Introduction

An implementation plan will be developed to guide application of decisions made in the ROD(s). The Implementation Plan will not add new objectives, standards, or guidelines, but it will describe an implementation process that will increase the likelihood of meeting management goals and objectives and of attaining the desired range of future conditions described in the selected alternative.

Time Frames for Implementation

Implementation of decisions made through this process will occur in two phases. First, activity planning and project design will begin almost immediately to reflect the management direction as described in the ROD. Generally, any ongoing, short-term activity that has been through the NEPA process would not be changed as a result of new direction. Short-term activities where analysis has been completed and decisions are pending will be screened to ensure there are no major conflicts with the new direction. Decisions affecting longer term permitted activities, such as livestock grazing and special-use activities, would have a transition period to come into compliance with new direction. The actual time frame and process to bring existing activities into compliance will be included in the Record of Decision. New projects will be designed to achieve the broad-scale objectives, and all new standards will be applied to those projects.

The second phase of implementation will occur over the longer term, whereby plans for individual administrative units will be reviewed for barriers to achieving broad-scale objectives. This should occur through the monitoring and evaluation process, and may lead to additional changes in plans through a later amendment or revision process that considers information specific to each administrative unit.

Interagency/Intergovernmental Coordination, Collaboration, and Accountability

This EIS has been prepared with close coordination and collaboration with other Federal agencies; State, local, and tribal governments; Resource Advisory Councils (RACs); and Provincial Advisory Committees (PACs). Expectations are high for these decisions to resolve many broad-scale issues within the project area. In order to maximize the likelihood of fulfilling these expectations, and to successfully restore the ecosystems of the interior Columbia Basin, a collaborative approach toward implementing decisions made in the Record(s) of Decision will be developed. Currently there is no project-wide, systematic approach for interagency or intergovernmental coordination, collaboration, and accountability. Several areas have been identified where opportunities should be provided to meet this need. They include, but are not limited to:

- Consistent interpretation and application of decisions;
- Coordinating and conducting Subbasin Review;
- Prioritizing and conducting Ecosystem Analysis at the Watershed Scale;
- Assessing cumulative effects;
- Monitoring and adaptive management;
- Data management and inventory;
- Accountability and credibility;
- Coordination and collaboration with other Federal agencies, State and local governments, and tribes.

There are many approaches that will be explored between the release of this Draft EIS and release of a Final EIS to address these areas. These approaches will be examined in light of their overall effectiveness and cost. Many efforts to coordinate and effectively communicate are currently in place in portions of the interior Columbia River Basin and may need to be institutionalized project-wide. For example, the *Federal Guide for Watershed Analysis, Version 2.2*, describes methods for and the value of interagency coordination; the *Guide* currently is being used in parts of the basin. Also, the Forest Service, Bureau of Land Management, National Marine Fisheries Service, Fish and Wildlife Service, and Environmental Protection Agency (EPA) have signed a Memorandum of Agreement (MOA) that streamlines consultation processes under the Endangered Species Act, and provides an effective issue resolution mechanism. This MOA, which provides a four-level process to resolve interpretation and accountability issues, appears to be working well and will likely be continued and expanded.

The Federal partner agencies are dedicated to ensuring that line officers from both the land management agencies and the regulatory agencies are held accountable for implementing the selected alternative (A-O1, A-S1, A-S2, in Table 3-5). Mechanisms for ensuring this accountability will be developed and reinforced prior to publishing the Final EIS.Opportunities will be provided to tribes, State and local governments, other Federal agencies, Resource Advisory Councils, and Provincial Advisory Committees to participate in this oversight (A-S3).

An Interagency Implementation Team consisting of representatives from the Forest Service, BLM, National Marine Fisheries Service, Fish and Wildlife Service, and Environmental Protection Agency will further develop and evaluate organizational options, process strategies, and training opportunities to accomplish this need and desire for interagency/intergovernmental cooperation, collaboration, and accountability.

Consultation with Tribal Governments

Indian tribes are asking, and the agencies agree, for the tribes to have more involvement in the decision process. The United States Government has an obligation to deal with Indian tribes as sovereign governments. Since late 1993, there have been numerous executive orders, laws, and statutes (See Appendix C) that have directed and encouraged this interaction. Objectives TI-O1 – 4 and associated standards (Table 3-5) direct agencies to meet Federal Government responsibilities, to maintain meaningful government-to-government relationships, and to consult with the tribes.

Consultation is an active, affirmative process which identifies issues and seeks input from affected tribal governments, considers their input, resolves conflicts, and explains decisions. It is a necessary and integral part of the decision-making process. Consultation can build strong working relationships and encourage exchange of local site-specific information resulting in better decisions.

Public Involvement and Collaboration

Federal agencies, social scientists, and others agree that ecosystem management requires greater participation by the public and other governmental agencies, especially for collaborative efforts that foster mutual learning. Alternatives 3 through 7 reflect this with a number of objectives and standards designed to ensure that stakeholders play an increased role in public land planning, implementation and monitoring.

These measures are directed at three main audiences: tribal governments, local and State governments, and other stakeholders. HU-S1 (Table 3-5) directs National Forests and BLM districts to initiate Memoranda of Understanding (MOU) or similar agreements with tribal, local and State governments to offer advice to Federal land managers in decision making. Objective HU-O1 directs agencies to provide opportunities for increased involvement by a broad range of stakeholders. The intent of these objectives is to provide opportunities beyond that required by NEPA to move beyond an activity-by-activity involvement of tribes, the public, and local and State governments.

An ongoing issue in public participation is how to involve not just the local and regional public, but the national public. There appears to be consensus that it is most important to involve people who will be most directly affected by public land management. However, the Economic Assessment demonstrated the tremendous national values associated with project area resources. Involving this constituency should be part of the process, especially in areas such as regional priority setting.

It will be important for tribal governments, other agencies, the public, and local and State governments to have the opportunity to participate in technology transfer efforts. If these participants are expected to have an increased role in planning, implementation, and monitoring, they, as well as agency employees, will need a better understanding of conditions, trends, issues and interactions, rather than just information about the result of analysis.

Collaborative approaches to implementation will be necessary to assure success. Close working relationships between management and regulatory agencies will need to be developed and maintained. Others outside the Forest Service and BLM should be involved in monitoring, evaluation, and adaptive management. The BLM and Forest Service retain the responsibility and authority for land management decisions. However, these decisions will be more meaningful, effective, and long lasting if done in an open process through collaborative means.

Linking Broad-scale Decisions and Information to Finer Levels

In this Draft EIS, certain requirements are described that provide a hierarchy of analysis to support land management decisions. The following section provides an outline of the expected types and levels of analysis that will "step-down" broad-scale information and decisions to site-specific actions. This step-down process is designed to ensure that broad-scale decisions are viewed within the context of local conditions, and that local decisions are made within the context of broad-scale goals and objectives.

While this Draft EIS contains regional direction and context for addressing broad-scale issues and resource conditions, most management actions will require further analysis and additional decisions prior to being implemented. This additional analysis is necessary to:

- Validate, refine, or add to information concerning current and historical resource conditions, processes, and interactions;
- Address issues not appropriately addressed at the broad scale;
- Prioritize restoration efforts to maximize the likelihood of meeting management goals and objectives, and to minimize negative impacts;
- Provide subregional and local input.

Analysis of ecosystems is a systematic way of gathering, organizing, and understanding ecosystem information. It is not, in itself, a decision-making process. Rather, it provides the information necessary to make wise, well-informed decisions as required by the National Environmental Policy Act (NEPA). With this information, managers can better understand and disclose the effects of their decisions. It also helps guide the type, location, and sequence of appropriate management activities within a watershed. In addition, this analysis can help identify monitoring and research needs.

Additional analysis is directed by the action alternatives (Alternatives 3 through 7) in this Draft EIS primarily to provide the context necessary for applying broad-scale decisions to site-specific situations. It is a particularly valuable instrument for providing the type and level of information necessary for amending and revising land-use plans and scheduling site-specific management activities.

While it is the goal of the Forest Service and BLM to conduct this analysis throughout the project area, it is required to different degrees, by alternative, before certain activities can proceed.

Hierarchy of Analysis

Three additional levels of analysis overview, below the project-wide analysis conducted as part of the ICBEMP are intended to provide the context necessary to appropriately implement these broad-level decisions on individual National Forests and BLM Resource Areas. They include Subbasin Review, Ecosystem Analysis at the Watershed Scale, and site-specific analysis. This hierarchy of analysis or review is intended to meet the objectives mentioned above; however, additional scales may be more appropriate for certain subregional issues. Generally, watershed scale analyses will be aggregated to address issues that transcend individual 5th- and 6th-field HUC watersheds.

Examples of information that should be considered during Subbasin Review and Ecosystem Analysis at the Watershed Scale are:

A. Socioeconomic -
- ◆Economic resiliency;
- ◆Transportation corridors, infrastructure;
- ◆Recreation opportunities;
- ◆Economic opportunities;
- ◆Urban interface;
- ◆Quality of life;
- ◆Custom and culture;

B. Tribal -
- ◆Indian religious sites;
- ◆Cultural and spiritual values;
- ◆Reserved rights on ceded lands;
- ◆Traditional use areas, hunting, fishing, grazing, and gathering areas and opportunities to improve these sites;

C. Biophysical -
- ◆Distribution and status of threatened, endangered, proposed, and candidate species, species of concern, sensitive species, or remnant populations of species;
- ◆Number of different native vertebrate species present or thought to be present in a given area (native species richness);
- ◆Designated or proposed critical habitat or habitat necessary for species recovery;
- ◆Populations with unique genetic traits or populations near the edge of the range of a more widely distributed species;
- ◆Habitat for rare or endemic species;
- ◆Distribution and status of exotic vertebrate and vascular plant species;
- ◆Watershed, aquatic, and terrestrial connectivity and potential for reestablishment of connectivity in fragmented watersheds;
- ◆High quality waters which include, but are not limited to:
  - waters whose quality is necessary to support threatened, endangered, candidate, and sensitive species restoration, conservation, or recovery;
  - waters/watersheds used as sources of public drinking water;
  - waters/watersheds where groundwater recharge to Sole Source Aquifers designated under the Safe Drinking Water Act occurs;
  - waters whose quality is necessary to support any beneficial use;
- ◆Degraded waters which include, but are not limited to:
  - waters that do not meet one or more State, EPA, or tribal water quality standards;
  - waters whose quality does not support a beneficial use;
  - waters officially designated as Water Quality Limited under Clean Water Act(CWA) Section 303(d);
  - waters currently meeting water quality standards but which require above-normal measures of practices to maintain;
- ◆Watershed, aquatic and terrestrial habitat condition;
- ◆Vegetation composition, distribution, health, and patch and pattern (includes, but not limited to insect and disease problems and fuel loading);
- ◆Verification of aquatic and terrestrial strongholds and subbasin category designations;
- ◆Downed woody debris and snags;
- ◆Biophysical and watershed sensitivity to natural and management disturbances;
- ◆Completeness of watershed, aquatic, and terrestrial information;
- ◆High quality, restorable, and previously restored terrestrial and aquatic habitats and waters including those important to the conservation of sensitive, candidate, proposed, and listed species. Indicators may include:
  - road density;
  - hydrologic integrity;
  - rangeland and forest land integrity.

Subbasin Review

The first step toward understanding how the *Scientific Assessment* relates to more localized conditions is Subbasin Review (800,000- to 1,000,000-acre watershed), which is directed in EM-O3 and EM-S1 for all of the action alternatives. This process is based upon existing information and is intended to be a brief validation; it is designed to:

- Review information provided in the ICBEMP *Scientific Assessment* and from the spatial prioritization process and validate with existing local information;
- Prioritize opportunities for Ecosystem Analysis at the Watershed Scale within the subbasins;
- Identify potential project level opportunities for implementing ecosystem management that can be determined at this scale;
- Identify data gaps;
- Identify opportunities for pooling interagency (Federal agencies), tribal, and intergovernmental (States, counties, cities) resources for completing analyses and project-level work.

Subbasin Review will generally occur on each 4th-field HUC across the project area. Exceptions include those watersheds where Forest Service- and BLM-administered lands make up only a small fraction of the total land area, or where lumping subbasins is logical. Subbasin Review will be conducted by an interagency, interdisciplinary team.

Ecosystem Analysis at the Watershed Scale

The second analysis scale below the broad-scale is watershed scale analysis (5th- or 6th-field HUC: 10,000- to 100,000-acre watersheds), which is directed in EM-O4 and EM-S5 through EM-S10 for all the action alternatives. This analysis will normally employ watershed and subwatershed boundaries, however, using other boundaries that are meaningful and efficient is appropriate as long as the logic and processes for Ecosystem Analysis at the Watershed Scale are followed, and the product provides context and information for decisions. This scale of analysis is intended to:

- Establish a consistent watershed-wide context for water quality conditions and protection of beneficial uses;
- Provide the hydrologic characterization and identification of pollutant sources;
- Understand actual conditions at a resolution necessary to make judgement about watershed-scale effects of actions on resources;
- Evaluate potential actions in the context of an overall understanding of the capabilities, limitations, and risks of a specific watershed;
- Identify watershed level issues and concerns;
- Identify synergies that can be gained through sequencing activities;
- Refine management standards to fit local conditions and values at risk;
- Identify monitoring needs for watershed-wide effects.

Ecosystem Analysis at the Watershed Scale will provide the opportunity for interagency and intergovernmental involvement and will follow the *Federal Guide for Watershed Analysis, Version 2.2*, or subsequent replacements. It will be conducted by teams of journey-level specialists who follow a standard six-step process. It is an incremental process, whereby information from inventories, monitoring reports, or additional analyses can be added at any time.

In many cases, activities that require an Environmental Assessment or an Environmental Impact Statement will also require Ecosystem Analysis at the Watershed Scale. To address any ambiguity between projects needing ecosystem analysis and those needing only site-specific analysis, an interagency team will develop a screening process that will help identify which activities that

require an EA or an EIS are exempt from the requirement to conduct Ecosystem Analysis at the Watershed Scale. This process will guide decisions concerning which projects are appropriate to proceed without watershed scale analysis in certain areas.

Information derived through Subbasin Review and Ecosystem Analysis at the Watershed Scale would be aggregated up to assist in making programmatic decisions, such as land-use plan amendments and revisions, and would be incorporated into project decisions at lower levels (EM-S4).

Site-specific Analysis

The third scale of analysis below the broad-scale is the site-specific, or activity-level analysis. This analysis will typically result in a NEPA process, including public scoping, and a site-specific decision document. While it may be feasible to analyze the effects of groups of activities at the watershed scale, a large majority of the activities proposed will be analyzed at the site-specific scale. Under the hierarchy of analysis outlined above, this scale of analysis acts as a safety net for those issues overlooked or appropriately excluded at larger scales, and provides site-specific information for determining effects. This level of analysis has been used extensively since the inception of NEPA in 1969, and in accordance with Forest Service NEPA Handbook 1909.15 and BLM NEPA Handbook H-1790-1. It has been proven successful at identifying and addressing local issues and concerns; however, as a stand-alone assessment process, it has often been ineffective at addressing larger scale issues. The site-specific analysis process will be significantly enhanced, predominantly by the context provided by higher scales of analysis when assessing cumulative effects. This process should further identify the monitoring necessary to meet those needs identified during Ecosystem Analysis at the Watershed Scale.

Management Activity Levels for Individual National Forests and BLM Resource Areas

Forest and range clusters are described in Chapter 2 in terms of resource conditions, risks, and opportunities. Management emphasis (Conserve, Restore, Produce, or a combination of these) is discussed in Chapter 3 for each alternative, based on the characteristics and conditions within the clusters and the theme of each alternative. Subbasin Review and Ecosystem Analysis at the Watershed Scale will review and validate or update these conditions, risks, and opportunities for individual subbasins.

Tables 3-6 and 3-7 in Chapter 3 show management activity levels predicted to occur as the result of changes in management emphasis, and goals and objectives for each alternative. The data used to generate these tables were broad in nature and appropriate to this scale of analysis. These estimates were used to run models and to assist in the evaluation of the alternatives. At this broad-scale, there is confidence that the activity tables are good indicators of outcomes of implementation of each alternative, or the relative differences between the alternatives; however, they should not be viewed as targets or requirements.

This Draft EIS sets forth priorities for areas where activities might occur based upon the forest and range clusters and management opportunities identified in the *Scientific Assessment*. The EIS team developed alternative strategies in the form of management priorities, DRFCs, goals, objectives, and standards. The priorities and constraints to types of activities that might occur in certain areas (such as riparian conservation areas) have also been described in each alternative. Based on ecosystem analysis to be performed, for the most part, after the ROD is signed, Forest Service and BLM administrative units, working in close coordination with other administrative units, other Federal agencies, State and local governments, tribes, and the public, will determine which activities, in what proportions, are appropriate for each administrative unit to accomplish. Time frames and actual locations for these activities will be developed during this process. Actual activity levels occurring during implementation will be monitored and differences from projected levels will be

evaluated. The effectiveness of activities in achieving desired outcomes will also be assessed. Selection of activities at the project level would become part of an adaptive management approach.

Interagency Cumulative Effects Analysis

The ecosystem management strategy proposed in this document is based on dynamic assessments that provide characterizations at different levels, and a monitoring and evaluation mechanism that helps validate or modify our current understanding about cause-and-effect relationships. The strategy will support decisions closer to the level that the issue, ecosystem process, or risk to ecosystem integrity occurs, through an adaptive approach. Through such a process cumulative effects can be observed and understood at different levels as well, and can more effectively be used by decision makers at the appropriate decision level.

As discussed in the section titled Management Priorities, understanding the cumulative effects of activities being proposed will be greatly aided by information garnered during the step-down analysis process; however, a formal determination of cumulative effects will be made at the decision-making levels discussed in the section titled Nature of Planning on National Forest System and BLM Lands. Likewise, monitoring and evaluation (see *A Framework for Monitoring, Evaluation, and Adaptive Management* later in this appendix) will provide vital information for determining if desired outcomes are being achieved, which will feed into decisions through land-use plan amendments and revisions, and through site-specific actions.

A coordinated and consistent approach between the Forest Service and BLM, and involvement of the other Federal partner agencies, will be crucial to the successful understanding of cumulative effects of broad-scale decisions made through this process. The Implementation Team will further develop these concepts prior to publication of the ROD.

This cumulative effects analysis process must be developed within the context of current legal definitions. The following information is provided to help the reader understand how the terms "cumulative impacts" and "cumulative effects" are defined in a legal context.

The term "cumulative impact" is defined in the Council on Environmental Quality (CEQ) regulations for NEPA at 40 CFR 1508.7; the Endangered Species Act (ESA) also defines "cumulative effects" at 50 CFR 402.02. To fully understand the use and meaning of the CEQ definition, we also need to look at other portions of the CEQ regulations at 1508.1, Terminology and 1508.8 Effects:

> NEPA 1508.1 Terminology: The terminology of this part shall be uniform throughout the Federal Government.
>
> NEPA 1508.7 Cumulative impact: Cumulative impact is the impact on the environment which results from the incremental impact of action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
>
> NEPA 1508.8 Effects: Include (a) Direct effects, which are caused by the action and occur at the same time and place. (b) Indirect effects, which are caused by the action and are later in time and farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
>
> Effects and impacts as used in these regulations are synonymous. Effects include ecological (such as the effects on natural resources and on the components, structure, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health,

whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effects will be beneficial.

ESA 402.2 Cumulative effects are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.

Snags and Downed Woody Debris

The action alternatives in the Draft EIS propose a variety of management options for forest vegetation to achieve a pattern that is more consistent with endemic levels of insects and diseases and natural fire regimes. The action alternatives propose reducing fuels and reintroducing fire across the landscape. This pattern on the landscape will also need to be managed to provide adequate levels of snag and downed woody debris habitat for terrestrial and aquatic species in the short-term, and to provide for long-term soil productivity.

Most current snag standards have been in place for 10 to 15 years. More is now known about interrelationships between ecosystem structures and processes, and these standards may not be consistent with other important variables that must also be considered. For instance, in determining desired snags per acre, consistency with fire or insect and disease disturbance regimes has often been overlooked. These disturbance regimes are desirable for creating and maintaining landscape patterns and micro-habitat structures that support native plants and animals. These regimes are variable and consequently the patterns that result are also variable. Ideally, management activities should focus on developing and maintaining a variable patchwork of landscape patterns whose living and dead structural attributes are consistent with biophysical environments and natural disturbance regimes.

HA-S7 (Table 3-5) directs administrative units to review existing information or conduct the appropriate analysis to link snag levels and recruitment standards to more localized biophysical environments. This same approach would be developed for determining the amount of coarse woody debris to retain, as directed by standards PE-S1, PE-S2, and HA-S8. Between publication of the Draft and Final EISs, a team will develop a consistent methodology and criteria for determining the appropriate levels. This will be reflected in the Record(s) of Decision. Although the goal is to move toward patterns that are consistent with natural disturbance processes, in the interim some adaptations may be necessary to ensure that no vital habitat is lost during the transition. For instance, to provide quality, quantity and distribution of snags in the short term, the amounts may have to be higher than expected for the biophysical environment on one site to compensate for another site.

Policies on Special Status Species

Not all special status species were analyzed at the broad-scale since populations may be endemic, may be most influenced by factors outside the control of the Forest Service or BLM, or for other reasons may be best addressed at finer scales of analysis. These species are covered under existing policies currently being implemented by the Forest Service and BLM and described or referenced below.

Under Forest Service Manual (FSM) 2670, Forest Service objectives for threatened, endangered, proposed, and sensitive species are outlined. The process of reviewing all Forest Service planned, funded, executed, or permitted programs and activities for possible effects on these species through the development of biological evaluations are described. In addition, FSM 2670.32 describes the objectives, responsibilities and processes associated with the Forest Service sensitive species program. Key objectives include:

- ◆Assist States in achieving their goals for conservation of endemic species;
- ◆As part of the NEPA process, review programs and activities, through a biological evaluation, to determine their potential effect on sensitive species;
- ◆Avoid or minimize impacts to species whose viability has been identified as a concern;
- ◆If impacts cannot be avoided, analyze the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole. (The line officer, with project approval authority, makes the decision to allow or disallow impact, but the decision must not result in loss of species viability or create significant trends toward Federal listing.)

BLM Manual 6840 provides policy and guidance for the conservation of special status species of plants and animals and their habitats. This group of species includes those that are officially listed, are proposed for listing, or are candidates for listing under the provisions of ESA; are State listed as endangered or threatened; and BLM sensitive, which are designated at the State Office level.

For Federal candidates such as bull trout or the spotted frog, the 6840 policies require that the BLM will carry out management, consistent with the principles of multiple use, for the conservation of candidate species and their habitats. The BLM is required to ensure that the actions authorized, funded, or carried out do not contribute to the need to list candidate species as threatened or endangered. The policy directs the agency to determine the status and distribution, and to address the species in land-use plans, in plan implementation, and in monitoring and evaluation.

BLM sensitive species are designated by the BLM State directors and are defined as species that may easily become endangered or threatened within a State.

Under the BLM Manual 6840, the BLM is also directed to cooperate with States where they have species listed as threatened or endangered, to assist States in meeting their management objectives.

Data Management and Technology Transfer

A key element for ecosystem management is the need for consistent, current, and accurate information concerning the ecological and biophysical environments across the landscape. The collection and management of this data and information among tribal, Federal, State, and local agencies need to be effectively coordinated and shared in order to implement ecosystem management. Currently, data are collected in many formats among and within agencies. Developing a minimum data standard for vegetation, aquatic, fisheries, and terrestrial components of the landscape should be explored.

To facilitate implementation of the decisions for this EIS and the findings of the scientific body of work, technical support will continue after the Record of Decision is signed. This support could consist of workshops, a science advisory group; a spatial analysis team; release, maintenance, and upkeep of the GIS database; maintenance and updates of the various databases and models that were developed for the ICBEMP; and technical assistance to support plan amendments (Information Systems [Gravenmier et al. 1996] chapter of the *Assessment of Ecosystem Components*).

Several types of workshops have been considered that could be useful in dissemination of the information gained during development of the ICBEMP. Technology transfer teams are crucial for providing user support and training to the field offices over the next several years. Science advisory groups could interpret, consult, and provide advice on ICBEMP products, data, databases, and models. A spatial analysis team could coordinate and maintain the GIS database, and provide data layer maintenance for key layers. The GIS data (170 themes) and associated databases (approximately 20) collected and created for use in the *Scientific Assessment* needs to be managed, maintained and shared. A central information clearinghouse could be established to support the update and implementation of Forest and BLM District land-use plans. A few of the existing models have been fully documented and have user guides (Information Systems [Gravenmier et al. 1996] chapter of the *Assessment of Ecosystem Components*). These issues will be addressed in the final Implementation Plan.

A Framework for Monitoring, Evaluation, and Adaptive Management

Introduction

The objective of this section of the appendix is to provide a framework to develop a specific monitoring and evaluation plan to measure the conditions and trends in the ICBEMP area. The information developed through the monitoring process can be used to assess management strategies, alter decisions, change implementation, or maintain current management direction. This Framework builds on *A Framework for Ecosystem Management in the Interior Columbia Basin* and the two Draft EISs. This framework is also based on concepts from *An Interagency Framework for Monitoring the President's Forest Ecosystem Plan, April 1994*. The actual monitoring plan will be developed prior to release of the Final EIS(s).

Monitoring and evaluation play pivotal roles in the adaptive management process, primarily to detect undesirable changes early enough that management activities can be modified to work toward achieving the desired goals and objectives of the plan. Adaptive management strategies must include all four parts of the process: planning, implementation, monitoring and evaluation. Resources must be allocated and priorities established so that all parts of adaptive management are completed over an appropriate time frame and no part is emphasized at the expense of another.

Monitoring is the process of collecting information to determine if ecosystem management strategies are being implemented as planned, if management goals and objectives are being met, and if there are any unanticipated results from implementing planned management strategies. Based on an evaluation of the monitoring information, current management can be maintained or adjusted to meet ecosystem management goals.

To be effective, monitoring and evaluation must be treated as an integral component of land management, be well conceived, and be adequately funded. Also, monitoring will necessitate a major, cooperative effort involving interested and affected parties, including Federal, State, local governments, tribes, Resource Advisory Councils, local communities, private landowners, and special interest groups. These parties share a common interest in attempting to achieve the objectives that emerged from the ICBEMP.

Just as ecosystems operate within a hierarchy, monitoring and evaluations follow the same logic. Each level of an ecosystem has discrete ecological functions but at the same time is part of the larger, integrated whole. Monitoring needs to follow the same pattern, answering questions and measuring trends at the various levels within the project area. Certain issues and activities within the project area can have effects at the broadest level, such as activities that affect air quality, noxious weeds, or wide-ranging species. Some issues or activities, such as forest health, juniper encroachment, and species endemism, operate within smaller geographic areas. Yet others are mostly of local concern, such as access management and municipal watersheds that may affect local communities. Monitoring strategies need to recognize this hierarchy and provide for data collection and evaluation at the appropriate levels.

A coordinated interagency interdisciplinary monitoring system is needed to determine the health and integrity of the project area ecosystems, determine condition and trends, and provide the basis for needed changes in management. Numerous Federal and non-Federal monitoring activities currently exist within the project area. Because of the wide variety of monitoring activities, the dispersed nature of data, and the inconsistency in the kinds of data collected, it is difficult and sometimes impossible to judge the health and integrity of the ecosystem at the regional level. Data should be collected for the different ownerships within ecosystems so that it can be aggregated to answer broad-scale questions. Once regional data elements are identified for monitoring, appropriate monitoring systems can be designed to allow for analyses.

Conceptual Framework of Monitoring

The conceptual framework contains four elements: goals, scope, general approach, and relationship of monitoring to other activities.

Goals of Monitoring

Monitoring efforts provide information to: (1) determine if planned activities have been implemented and standards and guidelines are being followed, (2) detect magnitude and duration of change in conditions and detect trends, (3) formulate and test hypotheses as to the cause of the changes, and (4) help managers better understand the causes of change and predict impacts.

Information provided through monitoring can be used to measure success in meeting plan goals. The *Scientific Assessment* and two Draft EISs identified the indicators used in making decisions. These indicators were considered when developing evaluation questions, identifying data needs, and monitoring process.

Under this approach, departures from expected conditions or other quantities are not treated as failures, but rather as new information to improve the quality of land management. Actions taken could be mitigation, change of actions in the future, and revised goals, or some mix of these. This iterative approach is referred to as *adaptive management*, described further in the Relationship of Monitoring to Other Activities section.

Scope of Monitoring

The monitoring and evaluation strategy focuses on Forest Service- and BLM-administered lands in the project area (see Map 1-1 in Chapter 1). Although the focus is on Forest Service- and BLM-administered lands, monitoring will likely cross administrative boundaries to measure the Federal component of the ecosystem. Monitoring will be a multi-agency effort.

Because ecosystems are complexes of biotic, abiotic, and human elements interacting over time and space, the biological, physical, social, and economic aspects will need to be monitored to determine if ecosystem goals are being met.

A major challenge in designing a monitoring program is to accommodate a variety of geographic levels (for example, basin, subbasin, watershed). A program needs to be developed in a manner that allows information gathered locally to be compiled and interpreted or analyzed to answer broad regional questions. In addition, the program needs flexibility to allow for monitoring and evaluation at the regional level to better address broad-scale questions.

Also challenging to development of a comprehensive monitoring plan is the complex array of landscapes, resources, management prescriptions, species requiring attention, and geographic areas that must be addressed. Adding to the challenge is that the priority for funds and/or personnel has often been low for monitoring and evaluation activities.

Sharing of information, adoption of data standards, and training among Federal agencies and other interested parties is vital for success.

General Approach of Monitoring Strategy

The following criteria should be considered when designing the monitoring strategy and should be appropriate at any level:

- Be cost effective so that meaningful monitoring can be done within agency budgets;

- Support management objectives and address the identified issues and problems;
- Be sensitive to significant changes in ecological and social systems;
- Address the hierarchy of geographic scales (basin, subbasin, watershed);
- Provide early warning so appropriate actions can be taken in a timely manner;
- Provide a basis for natural resource policy decisions through analysis at various levels;
- Provide for integration of information among resource functions to support efficiency and ecologically based decision making;
- Integrate monitoring at the landscape level with monitoring at the subregional and regional levels;
- Emphasize sound experimental design and standardized data collection which will support statistical analysis where necessary;
- Integrate inventories into the monitoring system;
- Provide for corporate storage and systematic compilation, interpretation, and analysis of data;
- Be accessible across organizational levels and administrative boundaries;
- Be implementable within the existing agency structure;
- Ensure data are promptly analyzed and applied in adaptive management;
- Provide for distribution of results in a timely and effective manner.

The general approach is to measure variables that index whole ecosystems. Significant change in these variables indicates a need for further study. Initially, this approach does not expect to directly identify cause-effect relationships; although they are needed, cause-effects relationships are left for follow-up investigations. Instead, it focuses on measuring change in the system which would indicate that further study and evaluation is warranted.

An initial step in developing the monitoring strategy is to define the questions that need to be answered at the regional level to evaluate attainment of ecosystem management goals and objectives in the project area. These questions can be used to focus the monitoring strategy on appropriate issues and avoid gathering information which has limited value in answering pertinent regional level questions. The questions will also be used to help design a system that can be implemented within agency budgets.

Technical and scientific staffs, in consultation with field managers, need to play a key role in designing a monitoring strategy—to help select key monitoring elements and indicators that can be statistically sampled and can provide desired data at a reasonable cost, and to help develop and shape the monitoring questions.

The "reductionist" approach (that is, measuring all the insects, mammals, soil properties, water, and the like) should not be used. Given limitations on funding, the approach is not affordable, and the complexity could never be understood. Equally important, measurements of each of these ecological elements may not be necessary to address key, identified questions. However, individual species or other taxonomic groups (such as guilds and families) or physical elements could be used if they are good indicators. Research can evaluate the effectiveness of alterative measures to improve future monitoring efforts.

A standard core set of data elements should be collected. Core data are the minimum set of variables to be collected at all scales. In all cases, standardized measurement and reporting protocols will be determined because of the essential need for consistency. Where possible, monitoring protocols should be designed to integrate existing monitoring efforts, and/or address multiple questions. Also, the design should allow flexibility for local administrative units to add data elements needed to answer subregional and landscape level questions.

The variables to be monitored may be indicators or surrogates representing other physical, biological, socioeconomic, cultural, and/or ecological processes. They must describe conditions and trends for functional, healthy ecosystems and be quantifiable and measurable in a repeatable way. A range of values for the variables may often be measured to account for the spatial and temporal variability found in a particular geographic area.

Determining the specific monitoring approach for any question depends on knowing detailed information on conditions that can only be determined on the ground. For example, trend assessment requires simply gathering baseline or status information. However, where continuous coverage for monitoring structure and patten is important, monitoring technique may include remote sensing; where vegetative detail and ground-level measurement are essential, sample-based systems would be used in monitoring. Successful implementation of large-scale monitoring may require a combination of approaches.

Relationship of Monitoring to Other Activities

Relationship of Monitoring to Adaptive Management Process

Adaptive management is a continuing process of planning, implementation, monitoring, and evaluation to adjust management strategies to meet goals and objectives of ecosystem management. It can be depicted as the continuous circle shown in Figure 1. Monitoring has a special role to play in adaptive management: to detect changes so that management activities can be modified to achieve management objectives.

Adaptive management emphasizes results, such as the achievement of desired functions, processes and interrelationships of ecosystem components. Since knowledge is incomplete when decisions are made, adjustments are made through time. A continual feedback loop based on new information allows for mid-course corrections to standards, guidelines, and underlying assumptions (at time intervals appropriate to the systems, processes, and functions analyzed), in order to meet the planned goals and objectives. It also provides a model for adjusting goals and objectives as new information develops through monitoring or other means and as public desires change.

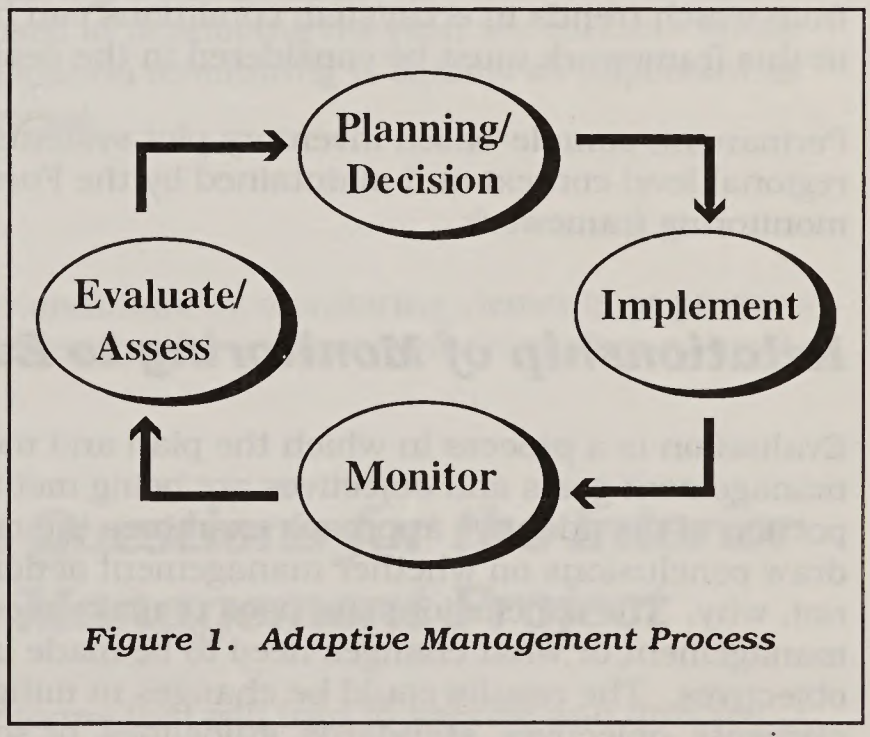


Figure 1. Adaptive Management Process

Relationship of Monitoring to Research

Research participation in the development of monitoring protocols is essential to the success of the adaptive management process described above. Data obtained through monitoring activities in a systematic and statistically valid manner can be used by scientists to develop research hypotheses related to priority issues. Conversely, the results obtained through research can be used to further refine the protocols and strategies used to monitor and evaluate the effectiveness of activities occurring in the implementation of ecosystem management.

Relationship of Monitoring to Ecosystem Analysis

Ecosystem analysis is a process to characterize human and ecological features, conditions, processes, and interactions within a geographic area. The analysis is intended to help estimate

direct, indirect, and cumulative effects of management activities and guide the general type, location and sequence of appropriate management activities within a geographic area. The tiered ecosystem analysis process developed in the ICBEMP is the analysis portion of adaptive management. For adaptive management to work, the decision-making system needs to be combined with the tiered analysis system so that analysis is done at the same scales as planning, implementation, and monitoring.

Reliance on achieving desired outcomes through local ecosystem analysis requires the assurance of an adequate monitoring, evaluation, and accountability system. A monitoring strategy will focus on the key issues and objectives at hand, link monitoring responsibilities at different organizational levels, and focus on the achievement of objectives and time frames outlined in the alternatives. Through this process, local BLM and Forest Service managers will be held accountable to ensure that on-the-ground decisions and activities maintain overall integrity of ecosystems at the landscape level and are linked to broader-level desired outcomes.

Currently, ecosystem analysis is often based on existing data; however, it should also incorporate monitoring and evaluation information. Ecosystem analysis information should additionally be considered in developing future monitoring plans. Information derived from Ecosystem analysis is used to: guide management prescriptions, including the setting and refining of boundaries in riparian areas; set restoration strategies and priorities; and reveal the useful indicators for monitoring environmental change.

For further information about the interrelationship between ecosystem analysis and monitoring, refer to the handbook, *Federal Guide for Watershed Analysis, Version 2.2*, which has been developed to assist in Ecosystem Analysis.

Relationship of Monitoring to Inventory and Survey

Inventories and surveys are parts of the adaptive management framework and need to be closely linked with monitoring. Information gathered in the inventory and survey process form a baseline from which trends in ecosystem conditions can be measured. Virtually all the concerns identified in this framework must be considered in the design of a sound inventory system.

Permanent, sample-based inventory plot systems established at the subregional level within a regional level context and maintained by the Forest Service and BLM will be part of the overall monitoring framework.

Relationship of Monitoring to Evaluation

Evaluation is a process in which the plan and monitoring data are reviewed to see if the management goals and objectives are being met and if management direction is sound. This portion of the adaptive approach examines the monitoring data gathered over time and uses it to draw conclusions on whether management actions are meeting stated goals and objectives and, if not, why. The conclusions are used to make recommendations on whether to continue current management or what changes need to be made in management practices to meet goals and objectives. The results could be changes in mitigating measures, future actions, monitoring elements, objectives, standards, guidelines, or some mixture of these.

Monitoring Components

This framework provides a starting point for building a Monitoring Program based on identifying the fundamental kinds of information that must be gathered to evaluate the success of ecosystem management. The next section of this document focuses on specific reasons for monitoring (evaluation questions) and proposes items to monitor (units of measure). In addition, the issue of scale or the appropriate geographic level of monitoring is addressed.

Types of Monitoring

Four types of monitoring (implementation, effectiveness, validation, and baseline) will be applied to meet management objectives and to evaluate management practices used in implementing local plans. These four types of monitoring encompass the broad spectrum of monitoring, some of which may be termed differently by certain agencies. All four types of monitoring need to occur to achieve the goals of the adaptive management process.

Implementation Monitoring

Implementation monitoring is the most basic type of monitoring and simply determines whether planned activities have been implemented and whether the standards and guidelines were followed. Some agencies call this *compliance monitoring*. Standards address land conditions that must be maintained, activities that are required, and processes that must be followed. Guidelines address the techniques that may be used in achieving planned activities.

Effectiveness Monitoring

Effectiveness monitoring is aimed at determining if the implementation of activities has achieved the desired goals and objectives, and whether the standards and guidelines have attained the goals and objectives of ecosystem management. Success may be measured against the benchmark of desired future condition. Cause-effect relationships will ultimately need to be understood to ensure that management actions result in desired conditions.

Validation Monitoring

Validation monitoring is intended to ascertain whether a cause-and-effect relationship exists among management activities or resources being managed. It confirms whether the predicted results occurred and if assumptions and models used in developing the plan are correct. While recognized for being demanding and expensive, validation monitoring is equally as important as implementation, effectiveness, and baseline monitoring.

Baseline Monitoring

Baseline monitoring is used to establish reference conditions by monitoring elements or processes that may be affected by management activities. Generally, the reference conditions are natural or relatively unaffected by human activities.

Defining Specific Evaluation Questions for the Interior Columbia Basin Ecosystem Management Project

Each monitoring type can be expressed in definite terms that will lead to specific and directed measurements. Each type has a specific set of objectives, which are applied differently depending on the question addressed. This section identifies general but important questions which should be addressed in the monitoring process. The questions are viewed as a starting point for development of an interdisciplinary, interagency monitoring program. Additional questions or adjustments to the list are expected to be identified by an interagency monitoring committee. Using the ICBEMP issues, goals, and objectives and the list of questions developed to address them, the committee will recommend for decision 10 to 15 of the most important items to track at the regional level. Monitoring plans often go unimplemented because they are too costly. This focused approach is essential to ensure agencies can afford to implement an appropriate, coordinated monitoring plan.

Implementation Questions

Implementation of ICBEMP decisions consists of management of three interrelated systems: Aquatic, Terrestrial, and Socioeconomic - within the context of Management Strategies (Conserve, Restore, Produce and combinations) and associated direction. The components of the decision which will drive implementation include:

- Goals and objectives for managing ecosystems;
- Management Strategies applied to subbasins;
- Standards and guidelines for managing ecosystem components;
- Ecosystem Analysis;
- Consideration of socioeconomic effects; and
- An adaptive management or learning process.

Monitoring and evaluation are organized around these components and required processes.

The general thrust of implementation monitoring and evaluation is to determine if Forest Service- and BLM-administered lands and systems are being managed according to plan. More specifically, given its particular focus, implementation monitoring addresses the following question:

- Are the planned activities being accomplished and are the standards and guidelines being followed?

Implementation Monitoring for Aquatic Systems

Specific questions include:

- Are Riparian Management Objectives developed and applied?
- Are Riparian Conservation Area widths and associated direction established and applied?
- Are management activities, including restoration projects, consistent with RMOs and RCA standards and guidelines?
- Are management activities, including restoration projects, consistent with standards and guidelines for Category 1–3 subbasins? (Generally addressed in questions about RCAs, RMOs, and Ecosystem Analysis at the Watershed Scale.)

Evaluation will determine if the required area designations and conditions for riparian and other areas have been established and used, if required conditions are being met, and whether activities occur which are permitted or not allowed. Key monitoring items to evaluate the above questions include:

- For activities - presence of timber harvest, kinds of other timber management activities, presence of grazing by ungulates, the specific conditions in which activities occurred, and the like.

Implementation Monitoring for Terrestrial Systems

For Forested Lands and Rangelands, specific questions include:

- Are vegetation management activities for forested lands and rangelands being accomplished as predicted or planned, and are unplanned disturbance mechanisms (such as, wildfire, insects, and floods) occurring within acceptable ranges?
- Are vegetation management and other activities for forests and rangelands being conducted according to standards and guidelines?

Evaluation for forests and rangelands is aimed at determining if planned management activities are being carried out and standards and guidelines are being met. Key monitoring items are:

- *For activities* - type and amount (acres) of vegetative manipulations (such as harvest, reforestation, rangeland seeding, prescribed fire, grazing) and "natural" events (such as wildfire, wildlife, and insects and disease).
- *For conditions* - post treatment or disturbance conditions by potential vegetation group such as:
  - Forest composition, densities and structures in harvest or thinned area
  - forage utilization
  - woody residue levels
  - noxious weeds and exotic plant species
  - snags, dead and downed trees
  - wildfire intensity and residual vegetation conditions

For terrestrial species, specific questions include:

- Are activities and protection requirements being implemented as planned for management of animal and plant species habitats?
- Are management practices and activities meeting terrestrial (animal and plant) habitat standards (and guidelines) for occurrence, distribution, size, and connectivity of late/old structure?
- Are management practices meeting requirements for special habitat features (including large trees, snags, downed wood, habitat linkages, road densities, caves, wet areas, and others) and endemic species habitats?
- Are approved Recovery Plans being followed?

lmplementation Monitoring includes the type and amount of various vegetative practices and activities and natural disturbance events and the direct effect of the disturbance (including post treatments) on habitats.

Implementation Monitoring for Socioeconomic Systems

Specific questions include:

- Are agencies, tribes, communities, Resource Advisory Councils, and the public involved in planning, implementing, monitoring and evaluating the plans/processes?

Key items to evaluate include:

- information sharing opportunities,
- active partnerships,
- collaborative efforts,
- educational forums and workshops,and
- community support and involvement.

Implementation Monitoring for Subbasin Review and Ecosystem Analysis at the Watershed Scale

Specific questions include:

- Has the Subbasin Review or Ecosystem Analysis at the Watershed Scale been completed (according to Federal Guide requirements)?

Key items to monitor include:

- the completion and documentation of results,
- the timing of planned analysis.

Effectiveness Questions

The purpose of effectiveness questions is to address how well planned actions and standards and guidelines achieve goals and objectives. The general effectiveness questions are: Is the implementation of management activities and are the standards and guidelines effective in attaining goals and objectives of the ICBEMP? To address these questions, the indicators are the items to be monitored because they are the important evaluation threads or ties through the Draft EISs. By measuring the same items in the same way, consistency in information and evaluation can be maintained.

Ecosystem Analysis is expected to provide information about processes and patterns within a watershed and also provide an additional focus for monitoring at that level. Effectiveness monitoring should be undertaken at a variety of reference sites in geographically and ecologically similar areas. The sites could be selected to represent a number of different monitoring levels and require the assistance of statisticians to design an appropriate sampling regime. Where possible, reference sites should be chosen that are presently being monitored by administrative units to minimize data gathering costs.

Effectiveness Monitoring for Aquatic Systems

Specific questions include:

- Are the ecological health and integrity of the aquatic system recovering or sufficiently maintained to support recovery and maintenance of viable populations of anadromous fish species and other fish species and stocks considered sensitive or at risk by Forest Service and BLM or listed under the Endangered Species Act?
- Are desired habitat conditions for fish stocks identified to be at risk maintained where adequate, and are these conditions restored where inadequate?
- Are management practices effective in attaining and/or maintaining proper functioning channel and riparian conditions (Proper Functioning Condition) for streams?

Key items are based on the Aquatic Strategy. For sample streams (and watersheds) within each aquatic Category 1–3 subbasin, key conditions to monitor include:

- Water quality
- Deep pools
- Riparian vegetation abundance
- Uniqueness
- Integrity
- Strongholds
- Present salmonids or other native species.

Additional items to monitor may be identified in Ecosystem Analysis. For example, the Clean Water Act directs that States adopt water quality standards and criteria as necessary to protect designated beneficial uses, such as cold water biota, recreation, and drinking water supply. These standards and criteria should be used in some instances to determine if water quality and the health of aquatic systems are being maintained.

Effectiveness monitoring may also begin to link the effectiveness or impacts of management activities on key conditions. For example, harvest activities, roads, or other disturbances are important activities to monitor relative to aquatic systems.

Effectiveness Monitoring for Terrestrial Ecosystems

An overall goal of the ICBEMP is to protect, enhance and restore the conditions and processes of the forest land and rangeland ecosystems.

For forests and rangeland ecosystems, specific questions include:

- ◆Are management actions achieving forest vegetation structure, composition pattern, and fuel regimes that are resilient to most likely disturbances?
- ◆Are management activities maintaining or restoring rangeland conditions within desired (levels) ranges?
- ◆Are changes resulting from "natural" disturbance processes in the forest and rangeland ecosystems moving those vegetative types toward goals and objectives (appropriate regimes)?

Monitoring and evaluation of forest and rangeland conditions focus on vegetative composition, structures, patterns and fuel loadings related to disturbance regimes. Key indicators and evaluation items for forests and rangelands at the landscape level include:

- ◆Forest composition, structure, density and pattern by forest potential vegetation group (acres) with emphasis on:
  - Dry Forest - late/old single story ponderosa pine;
  - Moist Forest - late/old multi-story stands of appropriate species; and
  - Cold Forest - appropriate forest structures, densities and composition.
- ◆Composition, condition and trend of rangeland vegetation by potential vegetation group with emphasis on native vegetation (acres).
  - Spread of exotic species and juniper on rangelands.
  - Disturbance types, extent and intensities (acres/trends).

For terrestrial species, specific questions include:

- ◆Are management practices maintaining and protecting key habitats and special habitat features where adequate and restoration activities improving these habitats where inadequate?
- ◆Are habitats of unique assemblages of species and areas high biodiversity protected and maintained?
- ◆Are recovery plans helping to (effectively) restore habitats and recover threatened or endangered species?

Key monitoring and evaluation items include:

- ◆The size, abundance and distribution of important habitats and habitat features:
  - Late/old forest structures appropriate for given forest potential vegetation groups.
  - Habitat linkages and connectivity
  - Large trees and snags 21"+ diameter at breast height
  - Native shrub steppe and native herb grassland potential vegetation groups.

Effectiveness Monitoring for Natural Resource Use Levels

Specific questions include:

- ◆Are the projected levels of timber, livestock forage, recreation, and other resource outputs available and being produced at sustainable levels?

Key items to measure and evaluate for each cluster and subbasin include:
- Timber harvest levels
- Livestock grazing levels
- Special Forest products
- Mineral extraction
- Recreation use/opportunities.

Effectiveness Monitoring for Rural Economics and Communities

Specific questions include:

- What is the contribution of Forest Service and BLM outputs to regional and sub-regional economics (county clusters) and economic opportunity? Is a diversity of recreation opportunities and scenic quality provided?
- Are management actions (activities) contributing to community vitality and resiliency?
- Are opportunities available for public participation?

Key indicators to monitor include:

- Demographics
- Timber and other natural resource based employment/personal income.
- Payment in Lieu of Taxes/Government revenues
- Community resiliency (index)
- Lifestyles
- Recreation opportunities - Recreation Opportunity Spectrum primitive/semi-primitive and roaded natural recreation availability
- Scenic integrity
- Public participation - effectiveness progress/collaboration.

Effectiveness Monitoring for Indian Tribes

Indian tribes have concerns within the scope of the project area. Specific monitoring questions include:

- Do Indian tribes have access to and use of plant and animal species, products, ethno-habitats, and places for cultural and economic reasons?
- Is habitat being managed for healthy, usable levels of resources upon which the tribes can exercise their tribal rights and interests?

The key monitoring items include:

- presence and availability of culturally significant plants, animals or fish, water and water quality, ethno habitats, and cultural resources in areas accessible to Indian tribes.

Validation Questions

The principal question related to validation is: Are the critical assumptions made in development and evaluation of the selected alternative valid?

Key assumptions need to be validated regarding the relationships within and among ecosystem components. This will require a mix of inventory, monitoring, and research. For example, while some relationships (such as fish habitat needs) are fairly well understood, many relationships are not known.

Where knowledge gaps exist, research and/or inventory will be needed. Where some knowledge exists, hypotheses can be proposed and tested through a combination of research and monitoring.

Validation will be further developed in consultation with research. Basically, validation will address questions surrounding the accuracy of the key assumptions made in the ICBEMP.

Four other types of validation should be pursued:

1. Animal population ties to habitats, especially the species thought to be associated with late/old forests. An approach toward historical conditions for vegetation is assumed to provide adequate habitat for species with different mobility capabilities. Are these assumptions valid?
2. Relationships between activities and created conditions. The question is: What conditions are created with different vegetation management activities, in what existing conditions, and for which kinds of forest and rangeland? The plan assumes certain cause-effect relationships.
3. Relationships between activities and human communities. The analysis of the alternatives assumed that certain economic effects and social structures result from different activities. Are these relationships between forest and range activities and society valid?
4. Relationships between forest and rangeland conditions and human communities. Plan analysis assumed that communities react in certain ways to forest and rangeland conditions, and that these actions may be related to scale of the human community (local, regional, or national). One example is visual conditions. The monitoring questions are: Are these assumptions valid? Do they continue to hold true in the future, or will the wants and demands of the public lands change?

Key items to monitor for each of the above questions is yet to be identified. Identification and measurement will rely on a mix of inventory, survey, other monitoring and research.

Baseline Monitoring Questions

The primary baseline question is: Have key baseline reference monitoring elements and processes been established and are data available which can be used to evaluate the effects of future management activities?

Two types of baseline monitoring should be pursued:

1. The current ecological condition of the project area is documented. The ICBEMP has developed extensive baseline data. It should be evaluated to see if it is sufficient to answer key future questions about ecosystem trends. The interagency monitoring committee should propose solutions for filling critical gaps in baseline data.
2. Data on reference conditions of representative ecosystems that are natural or substantially unaffected by human activity should be collected where it is critical for evaluating ecosystem management effects and future management options.

Scale for Monitoring

Monitoring will occur at various scales throughout the project area. The following table represents the first approximation of the level at which the different types of monitoring and the individual monitoring questions would be addressed. As the monitoring questions are refined, the locations for monitoring can be adjusted.

Table 1. Scale for Monitoring

Monitoring Questions	ICBEMP Project Area	Region/ State	Sub-Region	Forest/BLM District/ River Basin	Watershed/ Subwater-shed	Stand/ Reach
Implementation						
Aquatics				◆	◆◆	◆◆
Terrestrial						
Vegetation			✔	◆◆	◆◆	◆◆
Wildlife			✔	◆◆	◆◆	◆◆
Socio-Economic			◆	◆◆	◆	
Ecosystem Analysis			✔	◆	◆◆	◆
Effectiveness						
Aquatics	◆	◆◆	◆◆	◆◆	◆◆	◆
Terrestrial						
Vegetation	◆	◆	◆◆	◆◆	◆	
Wildlife	◆	◆◆	◆◆	◆◆	◆	
Natural Resource Use Levels	◆	◆◆	◆◆	◆◆		
Rural Economics and Communities	◆	◆◆	◆◆	◆◆		
Native American People	◆	◆◆	◆◆	◆	◆	
Validation	Not Rated ~ Emphasized at Larger Scales					
Baseline	Not Rated ~ Occurs at All Scales					

◆◆ Primary Monitoring Level
◆ Secondary Monitoring Level
✔ Potential Monitoring Level

Developing Interagency and Intergovernmental Monitoring

Development and implementation of monitoring to collect, report, and evaluate data in a manner that is both scientifically credible and economically feasible needs to be carefully designed and coordinated. As the previous sections explained, foremost needs are:

- ◆to develop and implement a common design framework and common indicators or environmental measurements,
- ◆to identify specific indicators within each monitoring component or activity, along with protocols and methodologies for their measurement and quality assurance, and
- ◆to establish a required level of detection ability, data quality objectives, and precision.

As also explained in previous sections, the monitoring framework that is established should: (1) be cost effective, (2) permit data to be integrated through statistical or modeling approaches to provide

quantitative inputs to the adaptive management process, and (3) accommodate multiple geographical scales and provide a consistent process for establishing monitoring sites, frequency of sampling, level of sampling, and specific techniques for analysis, synthesis, and reporting. Following this approach is critical to ensuring that consistent collection, integration, and evaluation of monitoring data occur among projects, watersheds, regions, agencies, and over long time periods.

Following is a five-step process for establishing a monitoring network:

Step 1: Establish linkages between and among agencies, tribes, advisory groups, and others.

Step 2: Identify information needs.

Step 3: Survey and evaluate ongoing monitoring efforts.

Step 4: Establish technical details.

Step 5: Establish a repository system for collected data, storage, and analysis.

Step 1. Establish Linkages Between and Among Agencies and Tribes

Both technical and administrative linkages need to be developed and maintained to implement this ICBEMP monitoring effort. This interagency effort will play a major role in coordinating implementation and overseeing a monitoring program.

To implement the ICBEMP interagency, regional-scale monitoring effort, an interagency monitoring committee could be formed under the direction of the interagency regional executives. A goal of the committee would be to integrate project area monitoring into the existing agency organizational structures. The Committee would develop specific technical details (design, indicators, protocols) and guidance for monitoring the ecosystem at the project area level, integrating data-gathering needs into existing field data-gathering efforts, and assembling it into useful forms for project area evaluations. It would also develop a system to manage the monitoring data using existing agency organizational structures. All protocols developed by the committee could be coordinated with ongoing monitoring efforts, including those of Federal, State, and local governments and tribes.

The committee could be co-chaired by BLM and Forest Service monitoring coordinators and be assisted by participating agencies and universities as needed. The interagency monitoring co-chairs would need to ensure that a coordinated, multi-organizational approach to monitoring is developed. The committee could contain a staff with technical expertise in monitoring, statistics, and social and environmental sciences. Staff assignments could provide flexibility to draw on different disciplines and expertise as the need arises. The regional executives of the participating agencies would need to ensure the approach developed by the committee is adequately funded at all organizational levels.

Monitoring responsibilities are expected to vary by the type of monitoring. The Forest Service and BLM administrative units or combinations of administrative units would accomplish most of the implementation monitoring and some of the effectiveness and baseline monitoring. Validation monitoring and some effectiveness monitoring are expected to be accomplished at broader scales and involve the coordinated interagency processes.

Specific monitoring assignments may be made to individual agencies within the context of an integrated approach. For example, the U.S. Fish and Wildlife Service may be assigned to measure and record preselected habitat conditions and/or animal populations. The National Marine Fisheries Service could be assigned different habitats and/or populations of fish. Affected State agencies may assume responsibilities for selected items within their respective States. The land management agencies and EPA would have their own selected responsibilities, as could the various tribes, should they choose to accept these roles.

In addition, private citizens and groups will be encouraged to participate in monitoring. This participation will be coordinated by individual agencies, as determined by the monitoring items, type and scale of monitoring, and agency responsibility. At the subregional or regional scales, Resource Advisory Councils (RACs), Coalition of Counties, or other bodies may also participate in monitoring through methods developed by the Committee.

Step 2. Identify Information Needs

The key monitoring items listed previously are the first approximation of regional monitoring questions and information needs as they relate to plan goals, objectives and standards. The lists will be subjected to further peer and agency review, which may result in changes or additions to the list.

When additional monitoring objectives and questions are agreed upon, a list of relevant indicators must be developed. This list should be based on current ecological knowledge and models, and it should represent a full range of possible indicators that address the management questions.

Each indicator on the list should be assessed using the following criteria:

- ◆Is there an explicit relationship to the questions and monitoring objectives?
- ◆Do the indicators reflect changes in the resource condition, status or value at multiple scales?
- ◆And, do these indicators distinguish between the system response and natural variability?
- ◆Are protocols available and adequate for reliable and repeatable measurement?
- ◆Will the information from monitoring this indicator provide results within a useful time frame?

In reviewing assessments, it should be asked whether all questions and monitoring objectives are addressed by the list of indicators, or whether there are identified gaps or barriers. The compiled indicator list should be submitted for peer review. An outcome of this process will be a list of indicators that address the specific quantitative questions and identify the appropriate protocols.

To be successful, the monitoring program will need to be objective driven; be founded on the best science available; operate at multiple scales; and have oversight of design, quality, control, and modification. This need requires agencies to make a major commitment to developing a process for coordinating their monitoring activities. Specific assignments and funding for carrying out these activities need to be identified.

Step 3. Survey the Ongoing Monitoring Efforts

This step consists of conducting an initial survey of the monitoring activities currently used by other agencies or groups within the project area to evaluate similar monitoring objectives and provide information about several aspects. This survey of existing projects should identify ongoing monitoring and provide for the identification of information gaps and barriers. Monitoring activities identified through this process will be potential candidates for incorporation into the interagency monitoring framework.

Information requests can be designed and distributed to all the potential agency components and other parties that collect relevant environmental data. The most efficient approach would be to have an initial survey to identify the relevant activities, followed by collection of in-depth information on the appropriate ones. These surveys should include the individual monitoring program, objectives, questions, ecological resources, indicators and associated protocols, design, quality assurance information, costs, and historical data.

After collecting information about existing monitoring, a detailed review and comparison of the developed information needs and existing monitoring should be conducted. Results from these

activities will help to identify specific monitoring programs and requirements for information that is not available through existing programs. Collected information for each monitoring program can be summarized in a report containing the following general categories:

- Program scope, objectives, and temporal and spatial resolution;
- Program methodology and design;
- Program documentation and reporting;
- Program organization and coordination;
- Program barriers, effectiveness, and weaknesses.

Step 4. Establish Technical Details

This step in the monitoring design process involves several elements: information or data quality objectives, indicators, statistical design, measurement and sampling protocols, and a quality assurance program.

Indicators and protocols that currently exist need to be evaluated to determine their adequacy in meeting the objectives. Where possible, this evaluation should be based on a previous set of data collected using the protocols. This evaluation should look at the interaction among indicator variables, statistical power and precision of the data (information quality objectives), frequency and scale of sampling necessary, cost of sampling, and the overall ability of the data to answer the monitoring questions. A consensus standard or method of achieving comparable data should be developed where alternative protocols have been used in different programs. In addition to supporting these various evaluations, information derived through this step will also help in evaluating the cost effectiveness or feasibility of the monitoring effort.

Although the general concepts of monitoring are broadly understood, application of the complex of natural resource monitoring protocols necessary to carry out the monitoring recommendations for any of the alternatives developed in the ICBEMP is complex. For example, there are many legal mandates for monitoring individual species across biologically complex areas. These mandates - coupled with considerations for management of habitats, plant communities, and ecosystems over a variety of spatial and temporal scales - require monitoring systems and approaches that may test and exceed the existing theory and technology for monitoring.

Adequate indicators and protocols need to be developed in those cases where they do not exist. Development of appropriate protocols will require coordination with the research components within the overall effort. If research results indicate that specific methods are successful, a pilot study should then be planned to field-test the methods and evaluate the results. After evaluation of the pilot study, any necessary changes can be made in the protocols. If the protocol is determined to be suitable, then the type and level of training necessary for field staff to implement the methods should be determined.

As technical monitoring groups identify the evaluation questions, there may be gaps and barriers found in existing research and monitoring technology. These gaps and barriers should be addressed by an interagency research and monitoring committee. This committee should identify research priorities for monitoring needs and determine the appropriate strategies for support of needed monitoring research.

Some of the issues related to sufficiency of monitoring technology that may be considered in developing a comprehensive monitoring strategy are:

- Efficiency;
- Simplicity;
- Sensitivity of monitoring measures relative to natural ranges of variation;

- Indicator development and testing;
- Development of new technology and adaptation of existing technology;
- Changes needed to current laws and regulations to make more effective monitoring operations, data collection and analysis;
- Development and effective transfer of sampling approaches, monitoring protocols and ideas on application where these elements do not exist;
- Adequate monetary support.

Step 5. Repository for Data and Analysis

The ICBEMP has created a large database that is expected to be used as baseline information in the evaluation process. That data could be stored at the Oregon/Washington BLM State Office and Forest Service Pacific Northwest Regional Office in Portland, Oregon. The data could be made available via a World Wide Web site (Internet). Each agency's information resource management staff, in coordination with monitoring coordinators, could be responsible for the administration of their agency's portion of the data.

The committee could develop a protocol for collection and storage of new regional level monitoring data. The comparability of data collected by all agencies is a crucial issue to be resolved by the committee. The protocol must be clear about how each agency's data contribute to the whole data set needed for evaluation of ecosystems at the regional level. Each agency would collect and maintain monitoring data according to the protocol developed by the committee and make it available upon request to other agencies for use in evaluation of ecosystem management. The monitoring coordinators and information resource management group would collect appropriate data from agency records, construct databases and manage the information for analysis or formal evaluation.

Evaluation

Evaluation is the next key component of the adaptive management process. It is the process by which a comprehensive, holistic review of the plan and monitoring data is developed. If the planning is completed, the plan is implemented, and monitoring data is gathered without the follow-up to judge the success of the plan, a high likelihood exists that problems will not be detected until a crisis develops. This portion of the adaptive approach focuses evaluation on the actions and outcomes where departures from expected conditions or results are treated not as failures but rather as new information to improve the quality of management. The results could be changes in mitigating measures, future actions, objectives, standards, guidelines, or some mixture of these.

The evaluation process is used to determine whether or not ecosystem management objectives and standards in the project area are being met and remain appropriate. It is the process of gathering together all the data available from the monitoring process and using it to answer these questions:

- Were the standards followed?
- Were the goals and objectives met?
- Were the standards effective at meeting the goals and objectives?
- Were the underlying management assumptions correct?
- Have public expectations for ecosystem management changed?
- Are the decisions still appropriate?

The public has an important role in evaluation. Many critics of the BLM and Forest Service lack confidence in the agencies' abilities to implement adaptive management. Public involvement can ensure that the public's concerns are addressed in the evaluation process.

The final stage of evaluation is to develop recommendations for changing current management, if needed, to meet ecosystem management goals. Adjustments should be related to implementation of management plans, management plan objectives, standards and guidelines, and monitoring data collection and integration. Recommendations should be used to modify land-use plans, thus completing the adaptive management circle.

Since knowledge is incomplete when decisions are made, adjustments need to be made through time. A continual feedback loop based on new information allows for mid-course corrections at time intervals appropriate to the systems, processes, and functions analyzed. An evaluation schedule needs to be set in advance to ensure that evaluations are conducted at intervals that allow for corrections in management direction before crises develop, that monitoring data is gathered in advance to be used in the evaluation process, and that the appropriate evaluation team is assembled to conduct the evaluation.

Regional-level changes in ecosystems occur slowly over time. Management evaluations made too frequently will not detect changes in the ecosystem because cost-effective monitoring systems cannot detect them. On the other hand, if ecosystem management evaluations are not conducted, or are delayed for too long, irreversible changes may take place without detection. To avoid this problem, two periodic management evaluations are proposed. The first is an implementation evaluation to be conducted every five years, beginning five years after completing the ICBEMP, to see if the plans resulting from the project were implemented. The second is an effectiveness evaluation, to be conducted 10 years after completion of the project, to see if management practices are leading to achievement of ecosystem management goals and objectives.

The five-year implementation evaluation could be conducted by BLM Districts and National Forests. Monitoring data would be evaluated and changes made to local actions where necessary to meet goals, objectives, standards of ecosystem management plans. BLM Districts and Forests within RAC boundaries should coordinate their evaluations and involve the RACs (or other public advisory groups) in the evaluation process. This coordination ensures that project area ecosystem management implementation issues are considered at the broader level while incorporating public participation. The general public and American Indian tribes also need to be involved in the evaluation.

A 10-year project area ecosystem management effectiveness evaluation could be conducted by an interagency evaluation team. The regional executives would form the monitoring team. It would evaluate ecosystem management plans and monitoring information with involvement of the public and develop findings and recommendations to the participating agencies on: 1) whether or not the management was effective in meeting goals and objectives; 2) whether or not the assumptions and models used in developing the plan were correct and are still valid or need to be changed; and 3) what changes are needed in mitigation measures, future actions, objectives, standards and guidelines to meet ecosystem management goals.

Funding

The majority of the funds and personnel necessary to conduct the monitoring, data management, and evaluation activities for the implementation of ecosystem management in the project area are expected to remain within the Federal land management agencies. However, the expertise needed to develop and refine scientifically credible monitoring approaches is expected to reside with individuals who are often located elsewhere (such as Forest Service Experiment Stations, National Biological Survey, State agencies, university researchers, and tribes).

Traditionally, funds have been allocated for the planning and implementation phases of the adaptive management process while monitoring and evaluation have been given minimal attention. Resources must be allocated and priorities established so that all parts of adaptive management are completed over an appropriate time frame and so that no individual part receives emphasis at the expense of another.

Costs relative to monitoring are associated with the agency monitoring coordinators and the interagency monitoring committee, information gathering, and data management. The Regional Executives would set priorities, the committee would develop the protocols, and the agencies would implement them. Because funds for ecosystem management are limited, monitoring and evaluation activities have to be carefully planned so that only critical information needed for evaluation is gathered.

Challenges to Implementation

Because of the diversity of resources, conditions, communities, and concerns throughout the planning area, challenges to successful implementation are expected to arise. This section summarizes some of these that have been compiled from an informal survey of BLM, Forest Service, and other agency employees; from challenges discussed in interdisciplinary and public meetings; from public and other comments received during the course of the project; and from an ICBEMP science contract report concerning barriers to ecosystem management.

Funding

Budget challenges come in three different ways: budget structure in which Congress determines the amount of money appropriated, and how it will be spent; the budget amount and composition of funds; and shrinking trust funds that have historically been generated by such things as the sale of timber.

The actual budget amount and associated flexibilities in how money can be invested in ecosystem management may be the largest of the budget challenges. Concern over the Federal budget deficit has constrained the amounts that the administration can request, and that Congress can appropriate. Other options need to be explored. Chapter 1 of this Draft EIS states that if full funding is not available, then the rate of implementation will be reduced appropriately. However, standards will be met at any funding level. Many management activities (including restoration) rely on agency ability to conduct Ecosystem Analysis at the Watershed Scale. In lieu of conducting this local analysis, all alternatives but Alternative 1 provide interim standards for such items as protecting riparian and aquatic resources and retention of snags and coarse woody debris.

Funding concerns discussed here are focused on implementation of expectations from this Draft EIS. They do not necessarily include the many other aspects of responsibilities and programs conducted by the BLM or Forest Service. Both the Forest Service and BLM have some flexibilities and authorities to reprioritize programs and the funding support to those programs. The authorities differ by agency, but the agencies recognize the need to work within these flexibilities in order to better respond to implementation. The agencies will need to evaluate the mixes of monies and flexibilities for using available funding to assure that goals and objectives of the selected alternative are met over the 10-year planning period.

Funding reductions sometime result in organizational restructuring which can present challenges in retaining the appropriate staff for implementing an integrated program. In addition, many employees move frequently within their careers. On the one hand, this creates new ideas and innovation; on the other hand, local relationships are interrupted, and local knowledge of how ecosystems respond to treatments often is lost.

Monitoring

Monitoring has been a challenge in the past. Often there has been more emphasis and energy in putting forth new projects than in conducting monitoring and evaluation activities. The action alternatives (Alternatives 3 through 7) have objectives and standards (AM-O2, AM-S3 through 7) that prescribe ways of approaching monitoring to meet this concern, as well as tying monitoring to decisions made during implementation. This will require that agencies reexamine how projects are funded and the rate of implementation, as monitoring will become an essential part of implementation.

Concerns have arisen about the effectiveness of restoration activities. In several alternatives, restoration is a primary feature. Restoration includes a great number of activities that address most of the components of ecosystems, including vegetation, disturbance, aquatic/riparian resources, and human needs associated with Forest Service and BLM management. The success of meeting many objectives in Alternatives 3 through 7 relies on agency abilities to conduct an integrated restoration program and to ensure that activities are successful in meeting objectives. With the tremendous variety and diversity of conditions within the project area, it is not realistic to think that activities appropriate in one area will necessarily work in others. This Draft EIS outlines restoration expectations at the broad-scale, and recognizes that implementation will occur at the fine or local level. Since successful implementation of any alternative is based on how effective implementation activities are conducted, the BLM and Forest Service expect to review restoration actions and programs through the monitoring and evaluation process, and to work within existing authorities to apply appropriate adaptive management techniques to respond to the results. The agencies also recognize that there is much variation in when results may be effectively evaluated. For example, replacing a culvert that impedes fish migration can show immediate results; determining trends on rangelands, or altering patterns and structure of forest landscapes, may take decades to evaluate the effectiveness of change. Long-term as well as short-term monitoring strategies are necessary, and collaborative approaches with tribes, other agencies, RACs, the public, and other governments will be necessary.

Many people who have been involved with this project have indicated a concern about traditional approaches not providing a reasonable degree of consistency in how programs are implemented among administrative units. Others are concerned that decisions resulting from the ROD(s) may not be applied consistently. The ICBEMP was initiated to deal with the first concern for certain broad-scale issues. The second concern should be addressed through monitoring and evaluation.

Due to the diversity of conditions, resources, and issues throughout the project area, some degree of variation is expected, however the goals, objectives, and standards should be met.

Existing Laws

The BLM and Forest Service are authorized and bound by many existing laws and treaties, and are tied closely to budget allocations, agency priorities, and congressional expectations. Agency activities must be conducted within this context. Many of these laws have been developed over time to respond to issues of the time. Sometimes these laws have competing requirements. Often agency staffs spend considerable energy in assuring that the intent of existing laws, regulations, and policies are met. Many of these are simple and straightforward; others are more complex. For instance, under existing mineral leasing laws, the agencies retain ultimate discretion whether or not to lease or which stipulations to attach, including no surface occupancy for leasable mineral resources such as oil, gas, geothermal and coal. Agencies can decide whether or not to sell common mineral resources such as gravel. Locatable minerals (such as gold and other metallic metals) are different because of the 1872 Mining Act, and agencies work with operators through notices and plans of operation to minimize adverse effects. Through these processes, agencies may, for example, comply with the mining law while meeting the intent of aquatic conservation strategies, or the Endangered Species Act.

Understanding Ecosystem Management

The challenge most frequently cited by respondents to the study prepared by Schlager and Friemund (1994) for the Social Science Staff of the Science Integration Team was the confusion surrounding the meaning of ecosystem management. Multiple definitions and interpretations have the potential to define ecosystem management so broadly that it becomes meaningless. The ambiguity causes many members of the public to be suspicious, and it can create unclear expectations by both the public and many agency employees. Many people have asked if humans are part of the ecosystem and are part of the goals for ecosystem management. This Draft EIS and associated supporting science documents include people and their needs as part of any successful ecosystem management strategy on these public lands. A related concern is that ecosystem management is an internal agency policy shift, and not one specifically based on new legislative direction. Ecosystem management is being implemented by the Forest Service and BLM in response to existing laws, changing public values, and new information/understandings. It will need to be well defined, with associated clear goals and expectations in order to be able to achieve successful implementation. The intent of this project and Draft EIS is to explain the concepts of ecosystem management and how these concepts would apply to management activities and expected outcomes on lands managed by the BLM or Forest Service. By doing this and by refining this implementation plan, many of the ambiguities about the term ecosystem management can be better addressed.

Agency Accountability and Credibility

Through the course of the ICBEMP, it has become clear that there is mistrust in the ability of the Forest Service and BLM to do what is specified in plans, policies, and programs. This results in frustrations on the part of some who rely on goods and services expected from these public lands. In addition, frustrations occur from those concerned about agency abilities to provide protection to such resources as threatened and endangered species or species of concern to tribes. Others are unclear about expectations and how programs will be implemented, and they ask for further clarity or stronger sideboards for management actions. There are two facets to this concern: (1) some events or processes such as appropriations, or the results of litigation are outside the control or the authorities of the agencies; (2) priorities may not be clearly communicated, accountability may not be clearly assessed, or organizational challenges may inhibit progress toward meeting goals. The latter are within the control of the agencies. Through discussions with many of the people associated with the project both internally and externally, there is a clearly expressed need to assure agency priorities and direction are clear and staffs are accountable for meeting these needs. This may be further addressed by the desire of many to expand the role of tribes, the public, and other agencies and governments in participating in agency planning, implementation, and monitoring activities such that problems are identified early and adjustments are made as necessary.

Tribal Concerns

In many areas, there is a lack of trust between tribes and the agencies. The Federal Government is reluctant to define the Federal trust responsibility beyond that which can be supported by case law. In some units, there is still a lack of understanding or awareness of the tribal interests in Federal land management as a result of treaties, executive orders, or other agency policies. This can create adversarial relationships, rather than partnerships. The involvement and participation by affected tribes take time, people, and money for both tribes and agencies often in excess of desired levels. Government-to-government consultation is necessary and is different for most tribes. Expectations for tribes and agencies often are different, frequently resulting in mistrust or differing determinations of success.

Perceived Threat to Private Interests

Ecosystem management conjures fears in some of increased direct or indirect governmental regulation or control of private landowner management practices or rights. With many rural communities within the planning area undergoing challenges or changes to their local economies, many people are understandably anxious about the future. Although the Forest Service and BLM have no authority, intent, or desire to make decisions or implement programs outside agency boundaries, this concern remains. In addition, there is a clear understanding that programs administered by the Forest Service and BLM can have effects on local communities, especially in more rural areas.

Ability to Implement Adaptive Management

Although there is widespread support for adaptive management as a principle and a process, sometimes agency operating regulations pose challenges. For instance, if through monitoring and evaluation a need is identified to alter a local land-use plan standard, or change a management allocation, a plan amendment often is needed. Depending on the significance of the amendment, the actual process may take substantial time and be subject to rigorous planning steps. Sometimes this discourages agencies faced with declining budgets and staffs to accomplish the needed changes.

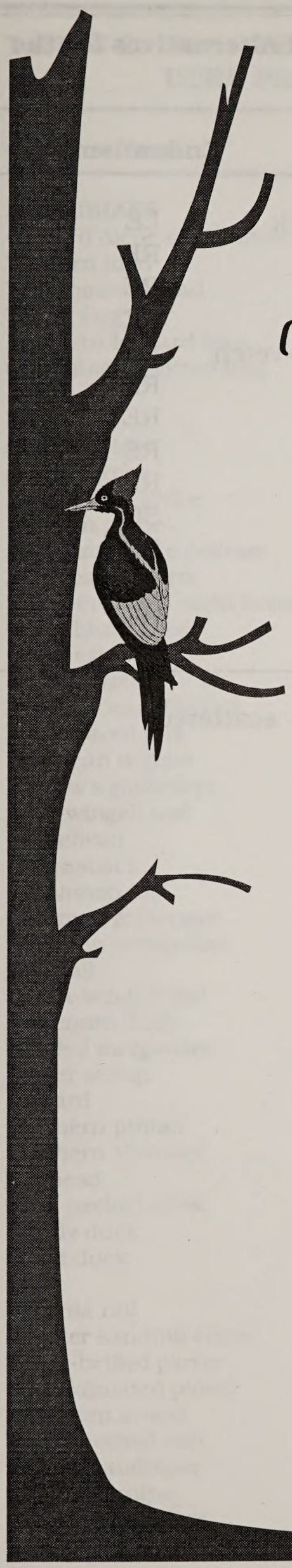
Reference List

Haynes, R.W.; Graham, R.T.; and Quigley, T.M. 1996. Framework for ecosystem management in the interior Columbia Basin and portions of the Klamath and Great Basins. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Quigley, T.M.; Arbeldibe, S.J., tech. eds. 1997. An assessment of ecosystem components in the interior Columbia Basin and portions of the Klamath and Great Basins. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 2 vols.

Regional Interagency Executive Committee and Intergovernmental Advisory Committee. 1995. Ecosystem analysis at the watershed scale: Federal guide for watershed analysis. Version 2.2. Portland, OR. 26pp.

Schlager, D.B.; Freimund, W.A. 1994. Institutional and legal barriers to ecosystem management. Walla Walla, Washington; Research report submitted to the Interior Columbia Basin Ecosystem Management Project.



Appendix J Terrestrial Species

(Comparable to Eastside Appendix 2-1)

This Appendix contains the following items:

- *Vascular Plants Evaluated by the SIT*
- *Vertebrates Evaluated by the SIT*
- *Vascular Plants Not Evaluated by the SIT*
- *Vertebrates Not Evaluated by the SIT*

Table J-1. Vascular Plant Species Used in the Evaluation of Alternatives for the UCRB Planning Area.

Scientific Name	Common Name	Endemism[1]
Mirabilis macfarlanei	MacFarlane's four-o'clock	LE
Astragalus mulfordiae	Mulford's milk-vetch	RE
Astragalus oniciformis	Picabo milk-vetch	RE
Astragalus paysonii	Payson's milk-vetch	RE
Astragalus yoder-williamsii	Osgood Mountains milk-vetch	RE
Calochortus nitidus	Broadfruit mariposa lily	RE
Grindelia howellii	Howell's gumweed	RE
Haplopappus liatriformis	Palouse goldenweed	RE
Penstemon lemhiensis	Lemhi penstemon	RE
Botrychium ascendens	Upswept moonwort	SC
Botrychium crenulatum	Dainty moonwort	SC
Botrychium paradoxum	Paradox moonwort	SC
Cypripedium fasciculatum	Clustered ladyslipper	SC
Howellia aquatilis	Water howellia	SC

[2] Endemism: LE - local endemic; RE - regional endemic; SC - scattered distribution;

Table J-2. Vertebrate Species Used in the Evaluation of Alternatives for the UCRB Planning Area.

Common Name	Scientific Name	Evaluation[1]
AMPHIBIANS		
Coeur d'Alene salamander	*Plethodon idahoensis*	HER
Western toad	*Bufo boreas*	HER
Woodhouse's toad	*Bufo woodhousii*	HER
Tailed frog	*Ascaphus truei*	HER
Northern leopard frog	*Rana pipiens*	HER
Columbian spotted frog	*Rana luteiventris*	HER
BIRDS		
Common loon	*Gavia immer*	WAT
Clark's grebe	*Aechmophorus clarkii*	WAT
Red-necked grebe	*Podiceps grisegena*	WAT
Western grebe	*Aechmophorus occidentalis*	WAT
American white pelican	*Pelecanus erythrorhynchos*	WAT
American bittern	*Botaurus lentiginosus*	WAT
Black-crowned night heron	*Nycticorax nycticorax*	WAT
Great blue heron	*Ardea herodias*	WAT
Great egret	*Casmerodius albus*	WAT
Snowy egret	*Egretta thula*	WAT
Western least bittern	*Ixobrychus exilis hesperis*	WAT
White-faced ibis	*Plegadis chihi*	WAT
American wigeon	*Anas americana*	WAT
Barrow's goldeneye	*Bucephala islandica*	WAT
Blue-winged teal	*Anas discors*	WAT
Bufflehead	*Bucephala albeola*	WAT
Canvasback	*Aythya valisineria*	WAT
Cinnamon teal	*Anas cyanoptera*	WAT
Common goldeneye	*Bucephala clangula*	WAT
Common merganser	*Mergus merganser*	WAT
Gadwall	*Anas strepera*	WAT
Green-winged teal	*Anas crecca*	WAT
Harlequin duck	*Histrionicus histrionicus*	WAT
Hooded merganser	*Lophodytes cucullatus*	WAT
Lesser scaup	*Aythya affinis*	WAT
Mallard	*Anas platyrhynchos*	WAT
Northern pintail	*Anas acuta*	WAT
Northern shoveler	*Anas clypeata*	WAT
Redhead	*Aythya americana*	WAT
Ring-necked duck	*Aythya collaris*	WAT
Ruddy duck	*Oxyura jamaicensis*	WAT
Wood duck	*Aix sponsa*	WAT
Sora	*Porzana carolina*	WAT
Virginia rail	*Rallus limicola*	WAT
Greater sandhill crane	*Grus canadensis tabida*	WAT
Black-bellied plover	*Pluvialis squatarola*	WAT
Semipalmated plover	*Charadrius semipalmatus*	WAT
American avocet	*Recurvirostra americana*	WAT
Black-necked stilt	*Himantopus mexicanus*	WAT
Baird's sandpiper	*Calidris bairdii*	WAT
Common snipe	*Gallinago gallinago*	WAT
Greater yellowlegs	*Tringa melanoleuca*	WAT
Least sandpiper	*Calidris minutilla*	WAT

Table J-2. Vertebrate Species Used in the Evaluation of Alternatives for the UCRB Planning Area (continued).

Common Name	Scientific Name	Evaluation[1]
Lesser yellowlegs	*Tringa flavipes*	WAT
Long-billed curlew	*Numenius americanus*	WAT
Long-billed dowitcher	*Limnodromus scolopaceus*	WAT
Marbled godwit	*Limosa fedoa*	WAT
Pectoral sandpiper	*Calidris melanotos*	WAT
Red-necked phalarope	*Phalaropus lobatus*	WAT
Sanderling	*Calidris alba*	WAT
Semipalmated sandpiper	*Calidris pusilla*	WAT
Spotted sandpiper	*Actitis macularia*	WAT
Upland sandpiper	*Bartramia longicauda*	WAT
Western sandpiper	*Calidris mauri*	WAT
Willet	*Catoptrophorus semipalmatus*	WAT
Wilson's phalarope	*Phalaropus tricolor*	WAT
Black tern	*Chlidonias niger*	WAT
California gull	*Larus californicus*	WAT
Forster's tern	*Sterna forsteri*	WAT
Ring-billed gull	*Larus delawarensis*	WAT
Bald eagle	*Haliaeetus leucocephalus*	RGB
Cooper's hawk	*Accipiter cooperii*	RGB
Ferruginous hawk	*Buteo regalis*	RGB
Northern goshawk	*Accipiter gentilis*	RGB
Swainson's hawk	*Buteo swainsoni*	RGB
Merlin	*Falco columbarius*	RGB
Blue grouse	*Dendragapus obscurus*	RGB
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	RGB
Mountain quail	*Oreortyx pictus*	RGB
Sage grouse	*Centrocercus urophasianus*	RGB
Band-tailed pigeon	*Columba fasciata*	RGB
Barred owl	*Strix varia*	RGB
Boreal owl	*Aegolius funereus*	RGB
Burrowing owl	*Athene cunicularia*	RGB
Flammulated owl	*Otus flammeolus*	RGB
Great gray owl	*Strix nebulosa*	RGB
Long-eared owl	*Asio otus*	RGB
Northern pygmy-owl	*Glaucidium gnoma*	RGB
Northern saw-whet owl	*Aegolius acadicus*	RGB
Western screech owl	*Otus kennicottii*	RGB
Vaux's swift	*Chaetura vauxi*	CAV
Black-backed woodpecker	*Picoides arcticus*	CAV
Downy woodpecker	*Picoides pubescens*	CAV
Hairy woodpecker	*Picoides villosus*	CAV
Lewis' woodpecker	*Melanerpes lewis*	CAV
Pileated woodpecker	*Dryocopus pileatus*	CAV
Red-naped sapsucker	*Sphyrapicus nuchalis*	CAV
Three-toed woodpecker	*Picoides tridactylus*	CAV
White-headed woodpecker	*Picoides albolarvatus*	CAV
Williamson's sapsucker	*Sphyrapicus thyroideus*	CAV
Chestnut-backed chickadee	*Parus rufescens*	CAV
Pygmy nuthatch	*Sitta pygmaea*	CAV
White-breasted nuthatch	*Sitta carolinensis*	CAV
Common nighthawk	*Chordeiles minor*	PAS
Black-chinned hummingbird	*Archilochus alexandri*	PAS

Common Name	Scientific Name	Evaluation[1]
BIRDS (Continued)		
Broad-tailed hummingbird	*Selasphorus platycercus*	PAS
Rufous hummingbird	*Selasphorus rufus*	PAS
Ash-throated flycatcher	*Myiarchus cinerascens*	PAS
Hammond's flycatcher	*Empidonax hammondii*	PAS
Olive-sided flycatcher	*Contopus borealis*	PAS
Willow flycatcher	*Empidonax traillii*	PAS
Horned lark	*Eremophila alpestris*	PAS
Bushtit	*Psaltriparus minimus*	PAS
Winter wren	*Troglodytes troglodytes*	PAS
Veery	*Catharus fuscescens*	PAS
Western bluebird	*Sialia mexicana*	PAS
Sage thrasher	*Oreoscoptes montanus*	PAS
Loggerhead shrike	*Lanius ludovicianus*	PAS
Red-eyed vireo	*Vireo olivaceus*	PAS
Bobolink	*Dolichonyx oryzivorus*	PAS
Brewer's blackbird	*Euphagus cyanocephalus*	PAS
Brewer's sparrow	*Spizella breweri*	PAS
Chipping sparrow	*Spizella passerina*	PAS
Grasshopper sparrow	*Ammodramus savannarum*	PAS
Green-tailed towhee	*Pipilo chlorurus*	PAS
Lark sparrow	*Chondestes grammacus*	PAS
Lazuli bunting	*Passerina amoena*	PAS
Red-winged blackbird	*Agelaius phoeniceus*	PAS
Rufous-sided towhee	*Pipilo erythrophthalmus*	PAS
Sage sparrow	*Amphispiza belli*	PAS
Vesper sparrow	*Pooecetes gramineus*	PAS
Western meadowlark	*Sturnella neglecta*	PAS
Western tanager	*Piranga ludoviciana*	PAS
Wilson's warbler	*Wilsonia pusilla*	PAS
White-winged crossbill	*Loxia leucoptera*	PAS
Yellow warbler	*Dendroica petechia*	PAS
Yellow-billed cuckoo	*Coccyzus americanus*	PAS
Yellow-breasted chat	*Icteria virens*	PAS
Black rosy finch	*Leucosticte atrata*	PAS
MAMMALS		
Fringed myotis	*Myotis thysanodes*	BSM
Hoary bat	*Lasiurus cinereus*	BSM
Long-eared myotis	*Myotis evotis*	BSM
Long-legged myotis	*Myotis volans*	BSM
Pale western big-eared bat	*Corynorhinus (Plecotus) townsendii pallescens*	BSM
Silver-haired bat	*Lasionycteris noctivagans*	BSM
Spotted bat	*Euderma maculatum*	BSM
Western small-footed myotis	*Myotis ciliolabrum*	BSM
Pygmy rabbit	*Brachylagus idahoensis*	BSM
White-tailed jackrabbit	*Lepus townsendii*	BSM
Northern flying squirrel	*Glaucomys sabrinus*	BSM
Gray wolf	*Canis lupus*	C&U
Grizzly bear	*Ursus arctos*	C&U
American marten	*Martes americana*	C&U
Fisher	*Martes pennanti*	C&U
Wolverine	*Gulo gulo*	C&U
Lynx	*Lynx lynx*	C&U
Woodland caribou	*Rangifer tarandus caribou*	C&U
Pronghorn	*Antilocapra americana*	C&U
California bighorn sheep	*Ovis canadensis californiana*	C&U

Table J-2. Vertebrate Species Used in the Evaluation of Alternatives for the UCRB Planning Area (continued).

Common Name	Scientific Name	Evaluation[1]
REPTILES		
Painted turtle	*Chrysemys picta*	HER
Desert horned lizard	*Phrynosoma platyrhinos*	HER
Longnose leopard lizard	*Gambelia wislizenii*	HER
Mojave black-collared lizard	*Crotaphytus bicinctores*	HER
Sagebrush lizard	*Sceloporus graciosus graciosus*	HER
Short-horned lizard	*Phrynosoma douglassii*	HER
Rubber boa	*Charina bottae*	HER
Common garter snake	*Thamnophis sirtalis*	HER
Night snake	*Hypsiglena torquata*	HER
Ringneck snake	*Diadophis punctatus*	HER
Striped whipsnake	*Masticophis punctatus*	HER

[1]Evaluation:
BSM - bat and small mammal panel;
CAV - cavity nesting woodpeckers, swifts, and nuthatches;
C&U - mammalian carnivore and ungulate panel;
HER - amphibian and reptile panel;
PAS - passerine and other birds;
RGB - raptor and game bird panel;
WAT -waterbird and shorebird panel;

Table J-3. Vascular Plant Species in the UCRB Planning Area with Designation for Evaluation at a Fine or More Local Scale or for Not Being Analyzed by Alternatives.

Scientific Name	Evaluation[1]	Endemism[2]
Abronia ammophila	Fine	LE
Agrostis rossiae	Fine	LE
Allium aaseae	Fine	LE
Astragalus atratus var. inseptus	Fine	LE
Astragalus vexilliflexus var. nubilus	Fine	LE
Balsamorhiza rosea	Fine	LE
Calochortus macrocarpus var. maculosus	Fine	LE
Castilleja christii	Fine	LE
Chrysothamnus parryi ssp. montanus	Fine	LE
Cymopterus davisii	Fine	LE
Draba trichocarpa	Fine	LE
Erigeron lackschewitzii	Fine	LE
Eriogonum meledonum	Fine	LE
Erythronium grandiflorum var. nudipetalum	Fine	LE
Haplopappus insecticruris	Fine	LE
Ivesia rhypara var. shellyi	Fine	LE
Lathyrus grimesii	Fine	LE
Leptodactylon glabrum	Fine	LE
Leptodactylon pungens ssp. hazeliae	Fine	LE
Lesquerella carinata var. languida	Fine	LE
Lesquerella humilis	Fine	LE
Lomatium erythrocarpum	Fine	LE
Luina serpentina	Fine	LE
Lupinus cusickii	Fine	LE
Mimulus hymenophyllus	Fine	LE

Table J-3. Vascular Plant Species in the UCRB Planning Area with Designation for Evaluation at a Fine or More Local Scale or for Not Being Analyzed by Alternatives (continued).

Scientific Name	Evaluation[1]	Endemism[2]
Mimulus patulus	Fine	LE
Oenothera psammophila	Fine	LE
Penstemon idahoensis	Fine	LE
Penstemon peckii	Fine	LE
Perideridia erythrorhiza	Fine	LE
Petrophytum cinerascens	Fine	LE
Phlox idahonis	Fine	LE
Physaria didymocarpa var. lyrata	Fine	LE
Primula alcalina	Fine	LE
Rubus bartonianus	Fine	LE
Saxifraga bryophora var.tobiasiae	Fine	LE
Tauschia hooveri	Fine	LE
Thelypodium repandum	Fine	LE
Tofieldia glutinosa ssp. absona	Fine	LE
Trifolium leibergii	Fine	LE
Arabis falcifructa	Fine	RE
Arabis fecunda	Fine	RE
Aster jessicae	no	RE
Aster mollis	Fine	RE
Astragalus anserinus	Fine	RE
Astragalus cusickii var.sterilis	Fine	RE
Carex parryana ssp. idahoa	Fine	RE
Chaenactis cusickii	Fine	RE
Cymopterus douglassii	Fine	RE
Descurainia torulosa	Fine	RE
Douglasia idahoensis	Fine	RE
Erigeron latus	Fine	RE
Erigeron salmonensis	Fine	RE
Eriogonum lewisii	Fine	RE
Haplopappus radiatus	Fine	RE
Ivesia rhypara var. rhypara	Fine	RE
Lepidium davisii	Fine	RE
Lepidium papilliferum	Fine	RE
Lesquerella carinata var. carinata	no	RE
Lesquerella paysonii	Fine	RE
Lesquerella pulchella	no	RE
Mentzelia mollis	Fine	RE
Mentzelia packardiae	Fine	RE
Mimulus clivicola	Fine	RE
Mimulus evanescens	Fine	RE
Oxytropis campestris var. columbiana	Fine	RE
Papaver pygmeae	Fine	RE
Penstemon compactus	Fine	RE
Physaria integrifolia var. monticola	Fine	RE
Trifolium owyheense	Fine	RE
Antennaria arcuata	Fine	SC
Oryzopsis contracta	no	SC
Phacelia inconspicua	Fine	SC
Phacelia minutissima	Fine	SC
Musineon lineare	Fine	DI
Sullivantia hapemanii var. hapemanii	Fine	DI
Carex lenticularis var. dolia	Fine	PE

[1] Fine - recommended for fine-scale analysis by Forests or BLM units;
"no" - no panel analysis done, and not recommended for fine-scale analysis. See (Quigley, Lee, and Arbelberide 1996) for detailed definitions.

[2] Endemism: LE - local endemic; RE - regional endemic; SC - scattered distribution; DI - disjunct; PE - peripheral.

Table J-4. Vertebrate Species in the UCRB Planning Area with Designation for Evaluation at a Fine or More Local Scale or for Not Being Analyzed by Alternatives.

Common Name	Scientific Name	Evaluation[1]
AMPHIBIANS		
Cascade torrent salamander	*Rhyacotriton cascadae*	no
Idaho giant salamander	*Dicamptodon aterrimus*	Fine
Long-toed salamander	*Ambystoma macrodactylum*	no
Tiger salamander	*Ambystoma tigrinum*	no
Rough-skin newt	*Taricha granulosa*	no
Pacific chorus frog	*Pseudacris regilla*	no
Western chorus frog	*Pseudacris triseriata*	no
Great basin spadefoot	*Spea intermontana*	no
Bullfrog	*Rana catesbeiana*	no
Foothill yellow-legged frog	*Rana boylei*	no
Green frog	*Rana clamitans*	no
Red-legged frog	*Rana aurora*	no
Wood frog	*Rana sylvatica*	Fine
BIRDS		
Pacific loon	*Gavia pacifica*	no
Red-throated loon	*Gavia stellata*	no
Yellow-billed loon	*Gavia adamsii*	no
Eared grebe	*Podiceps nigricollis*	no
Horned grebe	*Podiceps auritus*	no
Pied-billed grebe	*Podilymbus podiceps*	no
Double-crested cormorant	*Phalacrocorax auritus*	no
Cattle egret	*Bubulcus ibis*	no
Green heron	*Butorides virescens*	no
American black duck	*Anas rubripes*	no
Black scoter	*Melanitta nigra*	no
Brant	*Branta bernicla*	no
Canada goose	*Branta canadensis*	no
Eurasian wigeon	*Anas penelope*	no
Greater scaup	*Aythya marila*	no
Greater white-fronted goose	*Anser albifrons*	no
Mute swan	*Cygnus olor*	no
Oldsquaw	*Clangula hyemalis*	no
Red-breasted merganser	*Mergus serrator*	no
Ross' goose	*Chen rossii*	no
Snow goose	*Chen caerulescens*	no
Surf scoter	*Melanitta perspicillata*	no
Tundra swan	*Cygnus columbianus*	no
White-winged scoter	*Melanitta fusca*	no
Turkey vulture	*Cathartes aura*	no
Black-shouldered kite	*Elanus caeruleus*	no
Golden eagle	*Aquila chrysaetos*	no
Northern harrier	*Circus cyaneus*	no
Osprey	*Pandion haliaetus*	no
Red-shouldered hawk	*Buteo lineatus*	no
Red-tailed hawk	*Buteo jamaicensis*	no
Rough-legged hawk	*Buteo lagopus*	no
Sharp-shinned hawk	*Accipiter striatus*	no
American kestrel	*Falco sparverius*	no
Gyrfalcon	*Falco rusticolus*	no
Peregrine falcon	*Falco peregrinus*	no

Common Name	Scientific Name	Evaluation[1]
BIRDS (continued)		
Prairie falcon	*Falco mexicanus*	no
California quail	*Callipepla californica*	no
Chukar	*Alectoris chukar*	no
Gambel's quail	*Callipepla gambelii*	no
Gray partridge	*Perdix perdix*	no
Northern bobwhite	*Colinus virginianus*	no
Ring-necked pheasant	*Phasianus colchicus*	no
Ruffed grouse	*Bonasa umbellus*	no
Scaled quail	*Callipepla squamata*	no
Spruce grouse	*Dendragapus canadensis*	no
White-tailed ptarmigan	*Lagopus leucurus*	no
Wild turkey	*Meleagris gallopavo*	no
American coot	*Fulica americana*	no
Yellow rail	*Coturnicops noveboracensis*	Fine
Whooping crane	*Grus americana*	no
American golden-plover	*Pluvialis dominica*	no
Killdeer	*Charadrius vociferus*	no
Mountain plover	*Charadrius montanus*	no
Hudsonian godwit	*Limosa haemastica*	no
Red knot	*Calidris canutus*	no
Red phalarope	*Phalaropus fulicaria*	no
Short-billed dowitcher	*Limnodromus griseus*	no
Solitary sandpiper	*Tringa solitaria*	no
Stilt sandpiper	*Calidris himantopus*	no
Whimbrel	*Numenius phaeopus*	no
White-rumped sandpiper	*Calidris fuscicollis*	no
Bonaparte's gull	*Larus philadelphia*	no
Caspian tern	*Sterna caspia*	Fine
Common tern	*Sterna hirundo*	no
Franklin's gull	*Larus pipixcan*	no
Glaucous gull	*Larus hyperboreus*	no
Glaucous-winged gull	*Larus glaucescens*	no
Herring gull	*Larus argentatus*	no
Long-tailed jaeger	*Stercorarius longicaudus*	no
Mew gull	*Larus canus*	no
Parasitic jeager	*Stercorarius parasiticus*	no
Sabine's gull	*Xema sabini*	no
Thayer's gull	*Larus thayeri*	no
Mourning dove	*Zenaida macroura*	no
Rock dove	*Columba livia*	no
Black-billed cuckoo	*Coccyzus erythropthalmus*	no
Common barn owl	*Tyto alba*	no
Great horned owl	*Bubo virginianus*	no
Northern hawk owl	*Surnia ulula*	no
Short-eared owl	*Asio flammeus*	no
Snowy owl	*Nyctea scandiaca*	no
Common poorwill	*Phalaenoptilus nuttallii*	no
Whip-poor-will	*Caprimulgus vociferus*	no
Black swift	*Cypseloides niger*	no
White-throated swift	*Aeronautes saxatalis*	no
Anna's hummingbird	*Calypte anna*	no
Calliope hummingbird	*Stellula calliope*	no
Costa's hummingbird	*Calypte costae*	no
Belted kingfisher	*Ceryle alcyon*	no
Northern flicker	*Colaptes auratus*	no
Red-breasted sapsucker	*Sphyrapicus ruber*	Fine

Table J-4. Vertebrate Species in the UCRB Planning Area with Designation for Evaluation at a Fine or More Local Scale or for Not Being Analyzed by Alternatives (continued).

Common Name	Scientific Name	Evaluation[1]
Red-headed woodpecker	*Melanerpes erythrocephalus*	no
Yellow-bellied sapsucker	*Sphyrapicus varius*	Fine
Alder flycatcher	*Empidonax alnorum*	no
Cordilleran flycatcher	*Empidonax occidentalis*	no
Dusky flycatcher	*Empidonax oberholseri*	no
Eastern kingbird	*Tyrannus tyrannus*	no
Gray flycatcher	*Empidonax wrightii*	no
Least flycatcher	*Empidonax minimus*	Fine
Say's phoebe	*Sayornis saya*	no
Scissor-tailed flycatcher	*Tyrannus forficatus*	no
Western kingbird	*Tyrannus verticalis*	no
Western wood-pewee	*Contopus sordidulus*	no
Bank swallow	*Riparia riparia*	no
Barn swallow	*Hirundo rustica*	no
Cliff swallow	*Hirundo pyrrhonota*	no
Northern rough-winged swallow	*Stelgidopteryx serripennis*	no
Purple martin	*Progne subis*	no
Tree swallow	*Tachycineta bicolor*	no
Violet-green swallow	*Tachycineta thalassina*	no
American crow	*Corvus brachyrhynchos*	no
Black-billed magpie	*Pica pica*	no
Blue jay	*Cyanocitta cristata*	no
Clark's nutcracker	*Nucifraga columbiana*	no
Common raven	*Corvus corax*	no
Gray jay	*Perisoreus canadensis*	no
Pinyon jay	*Gymnorhinus cyanocephalus*	no
Scrub jay	*Aphelocoma coerulescens*	no
Steller's jay	*Cyanocitta stelleri*	no
Black-capped chickadee	*Parus atricapillus*	no
Boreal chickadee	*Parus hudsonicus*	no
Mountain chickadee	*Parus gambeli*	no
Plain titmouse	*Parus inornatus*	no
Red-breasted nuthatch	*Sitta canadensis*	no
Brown creeper	*Certhia americana*	no
Bewick's wren	*Thryomanes bewickii*	no
Canyon wren	*Catherpes mexicanus*	no
House wren	*Troglodytes aedon*	no
Marsh wren	*Cistothorus palustris*	no
Rock wren	*Salpinctes obsoletus*	no
American dipper	*Cinclus mexicanus*	no
American robin	*Turdus migratorius*	no
Blue-gray gnatcatcher	*Polioptila caerulea*	no
Golden-crowned kinglet	*Regulus satrapa*	no
Hermit thrush	*Catharus guttatus*	no
Mountain bluebird	*Sialia currucoides*	no
Ruby-crowned kinglet	*Regulus calendula*	no
Swainson's thrush	*Catharus ustulatus*	no
Townsend's solitaire	*Myadestes townsendi*	no
Varied thrush	*Ixoreus naevius*	no
Wrentit	*Chamaea fasciata*	no
Brown thrasher	*Toxostoma rufum*	no
Gray catbird	*Dumetella carolinensis*	no

Common Name	Scientific Name	Evaluation[1]
BIRDS (continued)		
Northern mockingbird	*Mimus polyglottos*	no
American pipit	*Anthus rubescens*	no
Sprague's pipit	*Anthus spragueii*	no
Bohemian waxwing	*Bombycilla garrulus*	no
Cedar waxwing	*Bombycilla cedrorum*	no
Phainopepla	*Phainopepla nitens*	no
Northern shrike	*Lanius excubitor*	no
European starling	*Sturnus vulgaris*	no
Solitary vireo	*Vireo solitarius*	no
Warbling vireo	*Vireo gilvus*	no
American redstart	*Setophaga ruticilla*	no
American tree sparrow	*Spizella arborea*	no
Baird's sparrow	*Ammodramus bairdii*	no
Bay-breasted warbler	*Dendroica castanea*	no
Black-and-white warbler	*Mniotilta varia*	no
Black-headed grosbeak	*Pheucticus melanocephalus*	no
Black-throated blue warbler	*Dendroica caerulescens*	no
Black-throated gray warbler	*Dendroica nigrescens*	no
Black-throated sparrow	*Amphispiza bilineata*	Fine
Blackburnian warbler	*Dendroica fusca*	no
Blackpoll warbler	*Dendroica striata*	no
Blue grosbeak	*Guiraca caerulea*	no
Brown-headed cowbird	*Molothrus ater*	no
California towhee	*Pipilo crissalis*	no
Chestnut-collared longspur	*Calcarius ornatus*	no
Chestnut-sided warbler	*Dendroica pensylvanica*	no
Clay-colored sparrow	*Spizella pallida*	Fine
Common grackle	*Quiscalus quiscula*	no
Common yellowthroat	*Geothlypis trichas*	no
Dark-eyed junco	*Junco hyemalis*	no
Dickcissel	*Spiza americana*	no
Fox sparrow	*Passerella iliaca*	no
Golden-crowned sparrow	*Zonotrichia atricapilla*	no
Great-tailed grackle	*Quiscalus mexicanus*	no
Harris' sparrow	*Zonotrichia querula*	no
Hermit warbler	*Dendroica occidentalis*	Fine
House sparrow	*Passer domesticus*	no
Indigo bunting	*Passerina cyanea*	no
Lapland longspur	*Calcarius lapponicus*	no
Lark bunting	*Calamospiza melanocorys*	no
Le Conte's sparrow	*Ammodramus leconteii*	no
Lincoln's sparrow	*Melospiza lincolnii*	no
MacGillivray's warbler	*Oporornis tolmiei*	no
Magnolia warbler	*Dendroica magnolia*	no
Mccown's longspur	*Calcarius mccownii*	no
Nashville warbler	*Vermivora ruficapilla*	no
Northern oriole	*Icterus galbula*	no
Northern parula	*Parula americana*	no
Northern waterthrush	*Seiurus noveboracensis*	no
Orange-crowned warbler	*Vermivora celata*	no
Ovenbird	*Seiurus aurocapillus*	no
Painted redstart	*Myioborus pictus*	no
Palm warbler	*Dendroica palmarum*	no
Rose-breasted grosbeak	*Pheucticus ludovicianus*	no
Rusty blackbird	*Euphagus carolinus*	no
Scarlet tanager	*Piranga olivacea*	no

Table J-4. Vertebrate Species in the UCRB Planning Area with Designation for Evaluation at a Fine or More Local Scale or for Not Being Analyzed by Alternatives (continued).

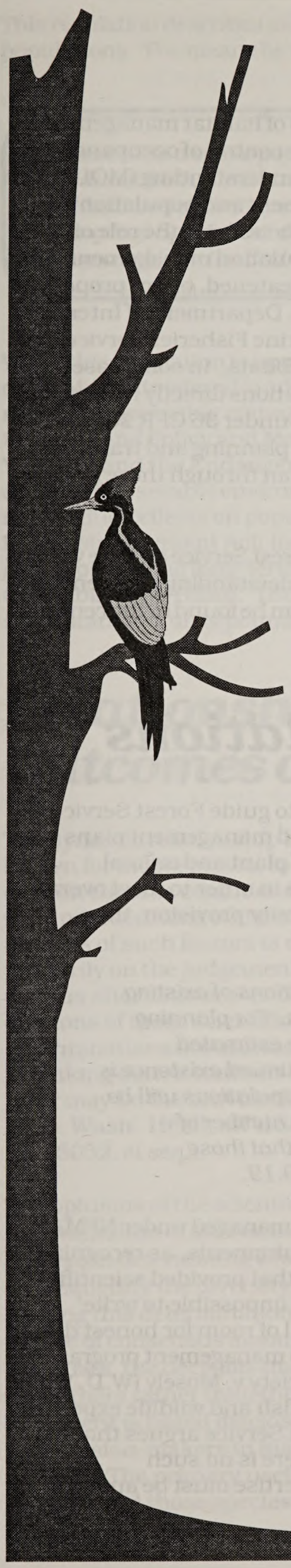
Common Name	Scientific Name	Evaluation[1]
Scott's oriole	*Icterus parisorum*	no
Snow bunting	*Plectrophenax nivalis*	no
Song sparrow	*Melospiza melodia*	no
Summer tanager	*Piranga rubra*	no
Swamp sparrow	*Melospiza georgiana*	no
Tennessee warbler	*Vermivora peregrina*	no
Townsend's warbler	*Dendroica townsendi*	no
Tricolored blackbird	*Agelaius tricolor*	Fine
Virginia's warbler	*Vermivora virginiae*	no
White-crowned sparrow	*Zonotrichia leucophrys*	no
White-throated sparrow	*Zonotrichia albicollis*	no
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	no
Yellow-rumped warbler	*Dendroica coronata*	no
American goldfinch	*Carduelis tristis*	no
Cassin's finch	*Carpodacus cassinii*	no
Common redpoll	*Carduelis flammea*	no
Evening grosbeak	*Coccothraustes vespertinus*	no
Gray-crowned rosy finch	*Leucosticte tephrocotis*	no
Hoary redpoll	*Carduelis hornemanni*	no
House finch	*Carpodacus mexicanus*	no
Lesser goldfinch	*Carduelis psaltria*	no
Pine grosbeak	*Pinicola enucleator*	no
Pine siskin	*Carduelis pinus*	no
Purple finch	*Carpodacus purpureus*	no
Red crossbill	*Loxia curvirostra*	no
Savannah sparrow	*Passerculus sandwichensis*	no
MAMMALS		
Virginia opossum	*Didelphis virginiana*	no
Masked shrew	*Sorex cinereus*	no
Merriam's shrew	*Sorex merriami*	no
Montane shrew	*Sorex monticolus*	no
Preble's shrew	*Sorex preblei*	Fine
Pygmy shrew	*Sorex hoyi*	Fine
Trowbridge's shrew	*Sorex trowbridgii*	no
Vagrant shrew	*Sorex vagrans*	no
Water shrew	*Sorex palustris*	Fine
Broad-footed mole	*Scapanus latimanus*	Fine
Coast mole	*Scapanus orarius*	no
Shrew-mole	*Neurotrichus gibbsii*	Fine
Big brown bat	*Eptesicus fuscus*	no
California myotis	*Myotis californicus*	no
Little brown myotis	*Myotis lucifugus*	no
Pallid bat	*Antrozous pallidus*	no
Western pipistrelle	*Pipistrellus hesperus*	no
Yuma myotis	*Myotis yumanensis*	Fine
Brazilian free-tailed bat	*Tadarida brasiliensis*	Fine
American pika	*Ochotona princeps*	no
Black-tailed jackrabbit	*Lepus californicus*	no
Eastern cottontail	*Sylvilagus floridanus*	no
Mountain cottontail	*Sylvilagus nuttallii*	no
Snowshoe hare	*Lepus americanus*	no

Common Name	Scientific Name	Evaluation[1]
MAMMALS (continued)		
Mountain beaver	*Aplodontia rufa*	Fine
Belding's ground squirrel	*Spermophilus beldingi*	no
California ground squirrel	*Spermophilus beecheyi*	no
Cascade golden-mantled ground squirrel	*Spermophilus saturatus*	no
Cliff chipmunk	*Tamias dorsalis*	Fine
Columbian ground squirrel	*Spermophilus columbianus*	no
Douglas' squirrel	*Tamiasciurus douglasii*	no
Eastern fox squirrel	*Sciurus niger*	no
Golden-mantled ground squirrel	*Spermophilus lateralis*	no
Hoary marmot	*Marmota caligata*	no
Idaho ground squirrel	*Spermophilus brunneus*	Fine
Least chipmunk	*Tamias minimus*	no
Red squirrel	*Tamiasciurus hudsonicus*	no
Red-tailed chipmunk	*Tamias ruficaudus*	no
Townsend's ground squirrel	*Spermophilus townsendii*	no
Uinta chipmunk	*Tamias umbrinus*	Fine
Uinta ground squirrel	*Spermophilus armatus*	Fine
Washington ground squirrel	*Spermophilus washingtoni*	Fine
Western gray squirrel	*Sciurus griseus*	Fine
White-tailed antelope squirrel	*Ammospermophilus leucurus*	Fine
Wyoming ground squirrel	*Spermophilus elegans nevadensis*	no
Yellow-bellied marmot	*Marmota flaviventris*	no
Yellow-pine chipmunk	*Tamias amoenus*	no
Botta's pocket gopher	*Thomomys bottae*	Fine
Brushprairie pocket gopher	*Thomomys talpoides douglasi*	Fine
Northern pocket gopher	*Thomomys talpoides*	no
Townsend's pocket gopher	*Thomomys townsendii*	no
Western pocket gopher	*Thomomys mazama*	no
California kangaroo rat	*Dipodomys californicus*	no
Chisel-toothed kangaroo rat	*Dipodomys microps*	no
Dark kangaroo mouse	*Microdipodops megacephalus*	no
Great basin pocket mouse	*Perognathus parvus*	no
Little pocket mouse	*Perognathus longimembris*	no
Ord's kangaroo rat	*Dipodomys ordii*	no
Beaver	*Castor canadensis*	no
Black rat	*Rattus rattus*	no
Bushy-tailed woodrat	*Neotoma cinerea*	no
Canyon mouse	*Peromyscus crinitus*	no
Columbian mouse	*Peromyscus keenii*	no
Common muskrat	*Ondatra zibethicus*	no
Creeping vole	*Microtus oregoni*	no
Deer mouse	*Peromyscus maniculatus*	no
Desert woodrat	*Neotoma lepida*	no
Dusky-footed woodrat	*Neotoma fuscipes*	Fine
Heather vole	*Phenacomys intermedius*	no
House mouse	*Mus musculus*	no
Long-tailed vole	*Microtus longicaudus*	no
Montane vole	*Microtus montanus*	no
Northern bog lemming	*Synaptomys borealis*	Fine
Northern grasshopper mouse	*Onychomys leucogaster*	no
Norway rat	*Rattus norvegicus*	no
Pinyon mouse	*Peromyscus truei*	Fine
Potholes meadow vole	*Microtus pennsylvanicus kincaidi*	Fine
Sagebrush vole	*Lemmiscus curtatus*	no
Southern red-backed vole	*Clethrionomys gapperi*	no

Table J-4. Vertebrate Species in the UCRB Planning Area with Designation for Evaluation at a Fine or More Local Scale or for Not Being Analyzed by Alternatives (continued).

Common Name	Scientific Name	Evaluation[1]
Water vole	*Microtus richardsoni*	no
Western harvest mouse	*Reithrodontomys megalotis*	no
Western red-backed vole	*Clethrionomys californicus*	no
Pacific jumping mouse	*Zapus trinotatus*	Fine
Western jumping mouse	*Zapus princeps*	no
Common porcupine	*Erethizon dorsatum*	no
Nutria	*Myocastor coypus*	no
Common gray fox	*Urocyon cinereoargenteus*	Fine
Coyote	*Canis latrans*	no
Kit fox	*Vulpes velox*	Fine
Red fox	*Vulpes vulpes*	no
Black bear	*Ursus americanus*	no
Common raccoon	*Procyon lotor*	no
American badger	*Taxidea taxus*	no
Ermine	*Mustela erminea*	no
Long-tailed weasel	*Mustela frenata*	no
Mink	*Mustela vison*	no
Northern river otter	*Lutra canadensis*	no
Striped skunk	*Mephitis mephitis*	no
Western spotted skunk	*Spilogale gracilis*	no
Bobcat	*Lynx rufus*	no
Mountain lion	*Felis concolor*	no
Feral horse	*Equus caballus*	no
Black-tailed deer	*Odocoileus hemionus columbianus*	no
Moose	*Alces alces*	no
Mule deer	*Odocoileus hemionus*	no
Rocky mountain elk	*Cervus elaphus nelsonii*	no
White-tailed deer	*Odocoileus virginianus*	no
American bison	*Bos bison*	no
Mountain goat	*Oreamnos americanus*	no
Rocky mountain bighorn sheep	*Ovis canadensis canadensis*	no
REPTILES		
Northern alligator lizard	*Elgaria coerulea*	no
Side-blotched lizard	*Uta stansburiana*	no
Western fence lizard	*Sceloporus occidentalis*	no
Western skink	*Eumeces skiltonianus*	no
Plateau striped whiptail	*Cnemidophorus velox*	no
Western whiptail	*Cnemidophorus tigris*	no
Gopher snake	*Pituophis catenifer*	no
Ground snake	*Sonora semiannulata*	Fine
Longnose snake	*Rhinocheilus lecontei*	Fine
Racer	*Coluber constrictor*	no
Western terrestrial garter snake	*Thamnophis elegans*	no
Western rattlesnake	*Crotalus viridis*	no

[1] Evaluation: Fine - recommended for fine-scale analysis by Forests or BLM units:
no - no panel analysis done, and not recommended for fine-scale analysis.



Appendix K Rationale for Viability Compliance

(Comparable to Eastside Appendix 4-2)

This Appendix contains the following items:

- *Introduction*
- *Management for Viable Populations*
- *Relationship Between SIT Evaluation Outcomes and Viability Determinations*
- *Conclusions*

Introduction

The management of fish and wildlife resources involves the interrelationship of habitat management and population management. While federal land management agencies have control of occupancy and use of the federal lands they administer, they have, through memoranda of understanding (MOUs) with state fish and wildlife agencies, made a distinction between habitat management and population management. These MOUs acknowledge that federal land management agencies have the role of habitat management and state fish and wildlife agencies have the role of population management. An exception would be for species that are federally listed as endangered or threatened, or are proposed for listing under the Endangered Species Act of 1973, as amended. The U.S. Department of Interior, Fish and Wildlife Service or the U.S. Department of Commerce, National Marine Fisheries Service have a consulting and oversight role for populations of these species and their habitats. In some cases federal management actions governing use and occupancy may affect populations directly rather than through habitat management. These circumstances include closure orders under 36 CFR 261 and decisions that may affect public access made through the land management planning and travel planning processes. Such decisions are being made at finer scales rather than through these broad-scale EISs.

Memoranda of understanding between the U.S. Department of Agriculture, Forest Service and the various state agencies can be found in Forest Service Manual 2610. Memoranda of understanding between the U.S. Department of Interior Bureau of Land Management and state agencies can be found in the central files of each BLM state office.

Management for Viable Populations

The NFMA required the Secretary of Agriculture to promulgate regulations to guide Forest Service planning. One of the statutory requirements is "specifying guidelines for land management plans developed to achieve the goals of the Program which provides for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives." 16 U.S.C. § 1604(g)(3)(B). In accord with this diversity provision, the Secretary promulgated a regulation that states the following:

> *Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. In order to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area. 36 CFR 219.19.*

Because of the enormous complexity and dynamic nature of the ecosystems managed under NFMA, there is no specific or precise standard or technique for satisfying these requirements, as recognized by the scientific community and many courts. The Committee of Scientists that provided scientific advice to the Forest Service on the crafting of NFMA regulations stated "it is impossible to write specific regulations to `provide for' diversity" and "there remains a great deal of room for honest debate on the translation of policy into management planning requirements and into management programs" (44 Fed. Reg. 26,600-01 & 26,608). In fact the court in Seattle Audubon Society v. Mosely (W.D. Wash. 1992) stated that the Forest Service must use common sense and apply its fish and wildlife expertise in implementing these requirements. The court also stated that "The Forest Service argues that it should not be required to conduct viability analysis as to every species. There is no such requirement. As in any administrative field, common sense and agency expertise must be applied."

This regulation describes as a goal of National Forest System management the maintenance of viable populations. The means by which the agency is to accomplish that goal is management of habitat.

For these EISs a viable population has the estimated numbers and distribution of reproductive individuals (both current and projected) to provide for a self-sustaining population with a sufficiently high likelihood of continued existence at a high enough level that listing of the species under the Endangered Species Act does not become warranted. A "listed species" is considered to be viable when it is removed from the Endangered Species list.

While this regulation is applicable only to lands managed by the Forest Service, management of habitat on BLM-administered land to achieve the same outcomes would not be inconsistent with statutory mandates governing management of BLM-administered lands, particularly the authorities under the Federal Land Policy and Management Act, and the directives found in the Multiple-Use Sustained-Yield Act and the Endangered Species Act. In addition, there is a separate duty under NEPA to disclose foreseeable environmental impacts, including cumulative effects of other actions, and these may include effects on populations. Consistency with Forest Service management under the National Forest Management Act, including the viability regulation, would also serve the important BLM policy goal of protecting long-term health and sustainability of all lands it administers within the interior Columbia River Basin. Thus, the BLM has chosen for this interagency management effort to apply the same standard to its planning process.

Relationship between SIT Evaluation Outcomes and Viability Determinations

The dynamic relationship between habitat conditions and species persistence is not yet well enough known for most species, to allow the construction of models capable of reliable population trends. The data on climatic conditions, geologic events, and other non habitat factors is so limited in duration and the understanding of the complex relationships involved so limited, that a reliable model of the impacts of such factors is not now available. Therefore, for most species a decision was made to rely primarily on the judgements of scientific experts on the likely habitat and population outcomes of the various alternatives over time. However, a process described below was used to structure the opinions of these scientific experts so that there is at least a common logical approach to their determinations of outcomes. This methodology is not the only approach which could have been used in making determinations of "viability", but it has been accepted as a reasonable method, and at this time, may be the best method available. See Seattle Audubon Society v. Lyons, 871 F.Supp. 1291 (W.D. Wash. 1994); aff'd Seattle Audubon Society v. Mosely,_F.3d_(9th Cir. 1996) (April 10, 1996; No. 95-35052, et seq.).

The opinions of the scientific panels, which were assembled by the Science Integration Team during the evaluation of alternatives, are considered projections of outcomes to be weighed by the decision-makers in determining whether a particular alternative would provide for viable populations and consequently the diversity in biological resources. The decision-makers may weigh other facts in making this determination, including the basis of the opinions by the scientific panelists, and the degree of consensus among the panel members. Where there is a divergence of opinions among the scientists, the decision-makers may choose to rely on the opinions of certain scientists, on the panels over others rather than the median level of opinion. The record on which this environmental impact statement is based discloses the basis for the scientific panel ratings and is available to the public and the decision-makers in making an assessment of the weight which should be given to that scientific opinion. The primary usefulness of the outcomes is to assist the agencies in identifying species of concern and those species which may benefit or suffer the most from the choices to be made among the alternatives.

Conclusions

Terrestrial Species

- Habitat outcomes is the method used to address the viability requirements of NFMA planning regulation 36 CFR 219.19. This method has been determined to be reasonable for addressing NFMA viability requirements for broad-scale, programmatic planning, and refers only to Federal Lands.
- Cumulative effects analysis, under the requirements of NEPA, was used to make inferences about populations and population persistence and habitat on non-Federal and Federal lands. This method was referred to as "Population Outcomes." See tables 1 through 16.

  Tables 1 through 16 display detailed results of the terrestrial species assessment. For each group of species (vascular plants; amphibians and reptiles; waterbirds and shorebirds; raptors and gamebirds; woodpeckers, nuthatches and swifts; cuckoos, hummingbirds and passerines; bats and small mammals; and carnivores and ungulates), the data are presented in two ways. The first table presents mean likelihood scores for each of the five outcomes for historical and current conditions and the seven alternatives. In this table, outcomes are presented first as habitat outcomes for federal lands only and then as population outcomes expressing cumulative effects across all ownerships. The second table for each species group displays the weighted mean outcomes that were derived from the mean likelihood scores. Data from these tables were used to develop figures in Chapter 4.

Aquatic Species

- Qualitative and quantitative changes in population distribution and status of key salmonids and changes in habitat for narrowly distributed, endemic, or sensitive fish species were used to address the viability requirements of NFMA planning regulation 36 CFR 219.19. These methods are to be reasonable for addressing NFMA viability requirements for broad-scale programmatic planning.
- Cumulative effects analysis, under the NEPA requirements, was used to make inferences about change in populations, population persistence, and habitat on non-Federal and Federal lands. For aquatic and terrestrial viability determinations see Chapter 4.

Table 1. Mean likelihood scores of viability outcomes for selected species of vascular plants for the UCRB Planning Area.

Species Name	Area[1]	Outcome[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
Astragalus mulfordiae	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	80	70	30	50	50	65	50	65	50
		4	20	30	60	40	40	25	40	25	40
		5	0	0	10	10	10	10	10	10	10
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	80	60	20	40	40	55	40	55	40
		4	20	40	60	40	40	30	40	30	40
		5	0	0	20	20	20	15	20	15	20
Astragalus oniciformis	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	90	60	40	40	55	60	55	60	70
		4	10	40	40	40	40	30	40	30	20
		5	0	0	20	20	5	10	5	10	10
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	90	60	50	50	60	60	60	60	50
		4	10	40	45	45	30	30	30	30	40
		5	0	0	5	5	10	10	10	10	10
Astragalus paysonii	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	80	70	70	60	85	90	85	90	85
		4	20	30	30	40	15	10	15	10	15
		5	0	0	0	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	80	70	70	60	85	90	85	90	85
		4	20	30	30	40	15	10	15	10	15
		5	0	0	0	0	0	0	0	0	0
Astragalus yoder-williamsii	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	90	70	80	70	70	90	80	90	80
		4	10	20	10	20	20	5	10	5	10
		5	0	10	10	10	10	5	10	5	10
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	90	70	80	70	70	90	80	90	80
		4	10	20	10	20	20	5	10	5	10
		5	0	10	10	10	10	5	10	5	10
Botrychium ascendens	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	50	50	0	0	0	0	0	0	0
		4	50	50	40	60	30	40	30	40	30
		5	0	0	60	40	70	60	70	60	70
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	50	50	0	0	0	0	0	0	0
		4	50	50	40	40	40	40	40	40	40

Table 1. Mean likelihood scores of viability outcomes for selected species of vascular plants for the UCRB Planning Area.

Species Name	Area[1]	Outcome[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
		5	0	0	60	60	60	60	60	60	60
Botrychium crenulatum	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	40	40	10	40	40	20	10	20	40
		4	60	60	40	40	40	40	40	40	40
		5	0	0	50	20	20	40	50	40	20
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	40	40	0	0	0	0	0	0	0
		4	60	60	40	40	40	40	40	40	40
		5	0	0	60	60	60	60	60	60	60
Botrychium paradoxum	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	50	50	40	40	40	40	40	40	40
		4	50	50	60	60	60	60	60	60	60
		5	0	0	0	0	0	0	0	0	0
Calochortus nitidus	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	10	10	20	10	25	25	25	25	20
		4	90	90	80	90	75	75	75	75	80
		5	0	0	0	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	70	10	5	5	5	5	5	5	0
		4	30	30	20	20	20	20	20	20	10
		5	0	60	75	75	75	75	75	75	90
Cypripedium fasciculatum	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	70	80	70	70	85	90	85	90	80
		3	30	10	20	20	15	10	15	10	20
		4	0	10	10	10	0	0	0	0	0
		5	0	0	0	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	60	70	70	80	70	90	65	90	85
		3	40	20	20	10	20	5	25	5	15
		4	0	10	10	10	10	5	10	5	0
		5	0	0	0	0	0	0	0	0	0
Grindelia howellii	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	0	50	60	75	80	70	80	70	70
		4	0	50	40	25	20	30	20	30	30
		5	100	0	0	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	0	60	85	85	85	85	85	85	85
		4	60	40	15	15	15	15	15	15	15
		5	40	0	0	0	0	0	0	0	0

Species Name	Area[1]	Outcome[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
Haplopappus liatriformis	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	80	0	0	0	0	0	0	0	0
		3	20	0	0	0	0	0	0	0	0
		4	0	20	10	10	10	10	10	10	10
		5	0	80	90	90	90	90	90	90	90
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	80	0	0	0	0	0	0	0	0
		3	20	0	0	0	0	0	0	0	0
		4	0	15	10	10	10	10	10	10	10
		5	0	85	90	90	90	90	90	90	90
Howellia aquatilis	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	90	90	85	85	85	85	85	85	90
		4	10	5	10	10	10	10	10	10	5
		5	0	5	5	5	5	5	5	5	5
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	90	90	80	80	80	80	80	80	90
		4	10	5	10	10	10	10	10	10	5
		5	0	5	10	10	10	10	10	10	5
Mirabilis macfarlanei	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	90	25	25	30	30	30	30	30	30
		4	10	70	70	65	65	65	65	65	70
		5	0	5	5	5	5	5	5	5	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	90	10	10	20	20	20	20	20	20
		4	10	80	80	70	70	70	70	70	70
		5	0	10	10	10	10	10	10	10	10
Penstemon lemhiensis	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	70	40	40	40	80	90	80	90	40
		4	30	50	50	50	20	10	20	10	60
		5	0	10	10	10	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	70	30	30	30	70	80	70	80	40
		4	30	60	60	60	30	20	30	20	60
		5	0	10	10	10	0	0	0	0	0

Likelihood scores for each period or alternative sum to 100 points. High scores indicate high likelihood of an outcome. Means are calculated from the individual likelihood scores of panelists.

[1] Area: BLM/FS - Eastern Oregon and Washington planning area, BLM and Forest Service lands only; CumEff - all lands in Eastern Oregon and Washington planning area;

[2] Outcome: 1 - contiguous; 2 - gaps; 3 - patchy; 4 - isolated; 5 - scarce. See Chapter 4 for complete explanation.

[3] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

Table 2. Mean viability outcomes for habitat and populations of vascular plants for the UCRB Planning Area.

Species Name	Area[1]	Period H	C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
Astragalus mulfordiae	BLM/FS	3.2	3.3	3.8[3]	3.6	3.6	3.5	3.6	3.5	3.6
	CumEff	3.2	3.4	4.0[3]	3.8	3.8	3.6	3.8	3.6	3.8
Astragalus oniciformis	BLM/FS	3.1	3.4	3.8	3.8	3.5	3.5	3.5	3.5	3.4
	CumEff	3.1	3.4	3.6	3.6	3.5	3.5	3.5	3.5	3.6
Astragalus paysonii	BLM/FS	3.2	3.3	3.3	3.4	3.2	3.1	3.2	3.1	3.2
	CumEff	3.2	3.3	3.3	3.4	3.2	3.1	3.2	3.1	3.2
Astragalus yoder-williamsii	BLM/FS	3.1	3.4	3.3	3.4	3.4	3.2	3.3	3.2	3.3
	CumEff	3.1	3.4	3.3	3.4	3.4	3.2	3.3	3.2	3.3
Botrychium ascendens	BLM/FS	3.5	3.5	4.6[3]	4.4[3]	4.7[3]	4.6[3]	4.7[3]	4.6[3]	4.7[3]
	CumEff	3.5	3.5	4.6[3]	4.6[3]	4.6[3]	4.6[3]	4.6[3]	4.6[3]	4.6[3]
Botrychium crenulatum	BLM/FS	3.6	3.6	4.4[3]	3.8	3.8	4.2[3]	4.4[3]	4.2[3]	3.8
	CumEff	3.6	3.6	4.6[3]	4.6[3]	4.6[3]	4.6[3]	4.6[3]	4.6[3]	4.6[3]
Botrychium paradoxum	BLM/FS	3.5	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Calochortus nitidus	BLM/FS	3.9	3.9	3.8	3.9	3.8	3.8	3.8	3.8	3.8
	CumEff	3.3	4.5	4.7	4.7	4.7	4.7	4.7	4.7	4.9
Cypripedium fasciculatum	BLM/FS	2.3	2.3	2.4	2.4	2.2	2.1	2.2	2.1	2.2
	CumEff	2.4	2.4	2.4	2.3	2.4	2.2	2.5	2.2	2.2
Grindelia howellii	BLM/FS	5.0	3.5	3.4	3.3	3.2	3.3	3.2	3.3	3.3
	CumEff	4.4	3.4	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Haplopappus liatriformis	BLM/FS	2.2	4.8	4.9	4.9	4.9	4.9	4.9	4.9	4.9
	CumEff	2.2	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Howellia aquatilis	BLM/FS	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	CumEff	3.1	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.2
Mirabilis macfarlanei	BLM/FS	3.1	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.7
	CumEff	3.1	4.0	4.0	3.9	3.9	3.9	3.9	3.9	3.9
Penstemon lemhiensis	BLM/FS	3.3	3.7	3.7	3.7	3.2[3]	3.1[3]	3.2[3]	3.1[3]	3.6
	CumEff	3.3	3.8	3.8	3.8	3.3[3]	3.2[3]	3.3[3]	3.2[3]	3.6

Mean outcomes were calculated as the weighted mean of average likelihood scores in each outcome.

[1] Area: BLM/FS - Upper Columbia Basin planning area, BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[2] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[3] Mean outcome for alternative departs from current outcome by greater than or equal to 0.50 units. Outcomes reported in table were rounded to 0.1 units; but, differences were calculated to 0.01 units. Hence, departure calculated from the table may be misleading.

Table 3. Mean likelihood scores of viability outcomes for amphibians and reptiles for the UCRB Planning Area.

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
AMP	Coeur d'Alene salamander	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	40	3	0	5	0	5	0	5	10
			4	50	63	45	65	70	70	45	70	75
			5	10	33	55	30	30	25	55	25	15
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	40	3	0	0	0	0	0	0	3
			4	50	57	15	22	23	28	15	32	45
			5	10	40	85	78	77	72	85	68	52
AMP	Spotted frog species B	BLM/FS	1	25	0	0	0	0	0	0	0	3
			2	50	20	5	18	18	20	5	20	23
			3	15	50	40	55	50	55	43	55	58
			4	10	30	50	28	33	25	50	25	18
			5	0	0	5	0	0	0	3	0	0
		CumEff	1	25	0	0	0	0	0	0	0	0
			2	50	20	0	18	18	18	3	18	20
			3	15	50	40	50	45	50	40	50	55
			4	10	30	55	33	38	33	55	33	25
			5	0	0	5	0	0	0	3	0	0
AMP	Northern leopard frog	BLM/FS[5]	1	3	0	0	0	0	0	0	0	0
			2	33	0	0	0	0	0	0	0	5
			3	33	0	0	10	0	20	0	25	30
			4	30	30	7	27	37	33	30	35	35
			5	0	70	93	63	63	47	70	40	30
		CumEff	1	3	0	0	0	0	0	0	0	0
			2	33	0	0	0	0	0	0	0	0
			3	33	0	0	0	0	0	0	0	0
			4	30	23	3	5	5	5	3	5	15
			5	0	77	97	95	95	95	97	95	85
AMP	Tailed frog	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	47	23	3	25	18	27	3	27	35
			3	28	43	18	45	45	42	25	42	37
			4	22	22	57	22	27	22	55	23	22
			5	3	12	22	8	10	10	17	8	7
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	47	23	3	5	5	5	3	5	7
			3	28	43	20	47	37	45	20	45	50
			4	22	22	27	37	42	37	32	37	32
			5	3	12	50	12	17	13	45	13	12
AMP	Western toad	BLM/FS	1	27	7	0	8	7	10	0	10	17
			2	43	45	15	42	43	40	15	40	40
			3	23	33	23	35	33	33	28	35	30
			4	7	13	55	12	13	13	52	12	12
			5	0	2	7	3	3	3	5	3	2
		CumEff	1	27	0	0	0	0	0	0	0	0
			2	43	18	3	8	8	12	5	12	17
			3	23	40	20	40	38	35	17	37	35
			4	7	30	23	37	37	37	27	37	33
			5	0	12	53	15	17	17	52	15	15

Table 3. Mean likelihood scores of viability outcomes for amphibians and reptiles for the UCRB Planning Area (continued).

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
AMP	Woodhouse's toad	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	25	0	0	5	2	10	0	15	15
			3	50	30	5	20	15	25	5	30	35
			4	25	65	55	50	50	50	55	50	45
			5	0	5	40	25	33	15	40	5	5
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	25	0	0	0	0	0	0	0	0
			3	50	30	0	0	0	0	0	0	0
			4	25	65	30	35	35	43	30	43	45
			5	0	5	70	65	65	58	70	58	55
REP	Common garter snake	BLM/FS	1	50	0	0	0	0	0	0	0	0
			2	50	50	23	50	50	50	23	50	53
			3	0	40	40	40	40	40	40	40	43
			4	0	10	38	10	10	10	38	10	5
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	50	0	0	0	0	0	0	0	0
			2	50	25	20	23	23	23	20	23	25
			3	0	40	18	43	43	43	18	43	40
			4	0	35	38	35	35	35	38	35	35
			5	0	0	25	0	0	0	25	0	0
REP	Desert horned lizard	BLM/FS	1	50	45	40	45	45	45	40	45	50
			2	50	55	60	55	55	55	60	55	50
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	50	45	40	45	45	45	40	45	50
			2	50	55	60	55	55	55	60	55	50
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
REP	Longnose leopard lizard	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	50	30	20	30	30	30	20	30	35
			4	50	60	60	60	60	60	60	60	55
			5	0	10	20	10	10	10	20	10	10
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	50	25	20	25	25	25	20	25	30
			4	50	60	55	60	60	60	55	60	60
			5	0	15	25	15	15	15	25	15	10
REP	Mojave-collared lizard	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	50	30	20	30	30	30	20	30	35
			3	50	60	60	60	60	60	60	60	55
			4	0	10	20	10	10	10	20	10	10
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	50	40	20	25	25	25	20	25	30
			4	20	40	40	60	60	60	40	60	60
			5	30	20	40	15	15	15	40	15	10

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
REP	Night snake	BLM/FS	1	50	45	40	45	45	45	40	45	50
			2	50	55	60	55	55	55	60	55	50
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	50	40	35	40	40	40	35	40	45
			2	50	60	65	60	60	60	65	60	55
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
REP	Painted turtle	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	50	35	18	33	30	40	18	43	50
			3	50	65	58	48	50	60	58	58	50
			4	0	0	25	20	20	0	25	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	50	15	10	15	13	13	10	15	18
			3	50	35	20	30	30	40	20	40	45
			4	0	50	45	35	38	48	45	45	38
			5	0	0	25	20	20	0	25	0	0
REP	Rubber boa	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	25	0	0	0	0	5	0	5	15
			3	50	48	25	48	48	48	25	48	50
			4	25	53	75	53	53	48	75	48	35
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	25	0	0	0	0	0	0	0	0
			3	50	45	15	20	20	25	15	25	38
			4	25	55	40	55	55	55	40	55	53
			5	0	0	45	25	25	20	45	20	10
REP	Sagebrush lizard	BLM/FS	1	50	40	35	40	40	40	35	40	45
			2	50	60	65	60	60	60	65	60	55
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	50	30	20	25	25	25	20	25	30
			2	50	40	35	40	40	40	40	40	40
			3	0	30	45	35	35	35	40	35	30
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
REP	Short-horned lizard	BLM/FS	1	50	40	30	40	40	40	30	40	45
			2	50	60	70	60	60	60	70	60	55
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	50	35	30	35	35	35	30	35	45
			2	50	65	70	65	65	65	70	65	55
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
REP	Striped Whipsnake	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	50	35	30	35	35	35	30	35	40
			4	50	55	55	55	55	55	55	55	50
			5	0	10	15	10	10	10	15	10	10

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	50	35	30	30	30	30	30	30	35
			4	50	55	55	60	60	60	55	60	55
			5	0	10	15	10	10	10	15	10	10

Likelihood scores for each period or alternative sum to 100 points. High scores indicate high likelihood of an outcome. Means are calculated from the individual likelihood scores of panelists.

[1] Group: AMP - amphibian; REP -reptile.

[2] Area: BLM/FS - Eastern Oregon and Washington planning area, BLM and Forest Service lands only; CumEff - all lands in Eastern Oregon and Washington planning area;

[3] Outcome: 1 - contiguous; 2 - gaps; 3 - patchy; 4 - isolated; 5 - scarce. See text for complete explanation.

[4] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[5] Species for which panelists' scores were adjusted by Science Team. Scores were adjusted when considered to reflect a misinterpretation or incomplete understanding of the management alternatives or their outcomes, or the species ecology.

Table 4. Mean viability outcomes for habitat and populations of amphibians and reptiles for the UCRB Planning Area.

Group[1]	Species Name	Area[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
AMP	Coeur d'Alene salamander	BLM/FS[4]	3.7	4.3	4.6	4.3	4.3	4.2	4.6	4.2	4.1
		CumEff	3.7	4.4	4.9	4.8	4.8	4.7	4.9	4.7	4.5
AMP	Spotted frog species B	BLM/FS	2.1	3.1	3.6	3.1	3.2	3.1	3.5	3.1	3.0
		CumEff	2.1	3.1	3.7[5]	3.2	3.2	3.2	3.6[5]	3.2	3.1
AMP	Northern leopard frog	BLM/FS[4]	2.9	4.7	4.9	4.5	4.6	4.3	4.7	4.2[5]	3.9[5]
		CumEff	2.9	4.8	5.0	5.0	5.0	5.0	5.0	5.0	4.9
AMP	Tailed frog	BLM/FS	2.8	3.2	4.0[5]	3.1	3.3	3.2	3.9[5]	3.1	3.0
		CumEff	2.8	3.2	4.2[5]	3.6	3.7[5]	3.6	4.2[5]	3.6	3.5
AMP	Western toad	BLM/FS	2.1	2.6	3.5[5]	2.6	2.6	2.6	3.5[5]	2.6	2.5
		CumEff	2.1	3.4	4.2[5]	3.6	3.6	3.6	4.3[5]	3.6	3.5
AMP	Woodhouse's toad	BLM/FS[4]	3.0	3.8	4.4[5]	4.0	4.1	3.7	4.4[5]	3.5	3.4
		CumEff	3.0	3.8	4.7[5]	4.7[5]	4.7[5]	4.6[5]	4.7[5]	4.6[5]	4.6[5]
REP	Common garter snake	BLM/FS	1.5	2.6	3.2[5]	2.6	2.6	2.6	3.2[5]	2.6	2.6
		CumEff	1.5	3.1	3.7[5]	3.2	3.2	3.2	3.7[5]	3.2	3.1
REP	Desert horned lizard	BLM/FS	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5
		CumEff	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5
REP	Longnose leopard lizard	BLM/FS	3.5	3.8	4.0	3.8	3.8	3.8	4.0	3.8	3.8
		CumEff	3.5	3.9	4.1	3.9	3.9	3.9	4.1	3.9	3.8
REP	Mojave black-collared lizard	BLM/FS	2.5	2.8	3.0	2.8	2.8	2.8	3.0	2.8	2.8
		CumEff	3.8	3.8	4.2	3.9	3.9	3.9	4.2	3.9	3.8

Group[1]	Species Name	Area[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
REP	Night snake	BLM/FS	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5
		CumEff	1.5	1.6	1.7	1.6	1.6	1.6	1.7	1.6	1.6
REP	Painted turtle	BLM/FS	2.5	2.7	3.1[5]	2.9	2.9	2.6	3.1[5]	2.6	2.5
		CumEff	2.5	3.4	3.9[5]	3.6	3.7	3.4	3.9[5]	3.3	3.2
REP	Rubber boa	BLM/FS	3.0	3.6	3.8	3.6	3.6	3.5	3.8	3.5	3.2
		CumEff	3.0	3.6	4.3[5]	4.1	4.1	4.0	4.3[5]	4.0	3.8
REP	Sagebrush lizard	BLM/FS	1.5	1.6	1.7	1.6	1.6	1.6	1.7	1.6	1.6
		CumEff	1.5	2.0	2.3	2.1	2.1	2.1	2.2	2.1	2.0
REP	Short-horned lizard	BLM/FS	1.5	1.6	1.7	1.6	1.6	1.6	1.7	1.6	1.6
		CumEff	1.5	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6
REP	Striped whipsnake	BLM/FS	3.5	3.8	3.9	3.8	3.8	3.8	3.9	3.8	3.7
		CumEff	3.5	3.8	3.9	3.8	3.8	3.8	3.9	3.8	3.8

Mean outcomes were calculated as the weighted mean of average likelihood scores in each outcome.

[1] Group: AMP - amphibian; REP - reptile

[2] Area: BLM/FS - Upper Columbia Basin planning area, BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[3] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[4] Species for which panelists' scores were adjusted by Science Team. Scores were adjusted when considered to reflect a misinterpretation or incomplete understanding of the management alternatives or their outcomes, or the species ecology.

[5] Mean outcome for alternative departs form current outcome by greater than or equal to 0.50 units. Outcomes reported in table were rounded to 0.1 units; but, differences were calculated to 0.01 units. Hence, departure calculated from the table may be misleading.

Table 5. Mean likelihood scores of viability outcomes for habitat and species groups of waterbirds and shorebirds for the UCRB Planning Area.

Habitat & Species Groups	Area[1]	Outcome[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
Group 1: Open water birds	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	2	1	0	3	3	6	0	6	2
		3	80	61	36	58	58	67	54	67	65
		4	18	28	48	37	37	22	34	22	31
		5	0	10	16	2	2	5	12	5	2
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	4	6	2	4	4	12	4	12	4
		3	78	59	38	57	55	60	55	60	61
		4	18	27	46	37	39	24	32	24	33
		5	0	8	14	2	2	4	9	4	2
Group 2: Common loon	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	4	4	4	4	4	4
		3	18	45	34	42	42	44	42	44	42
		4	82	55	54	54	54	52	54	52	54
		5	0	0	12	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	16	14	16	16	16	16	16	16
		3	37	35	24	33	33	34	34	34	33
		4	63	49	49	51	51	50	50	50	51
		5	0	0	13	0	0	0	0	0	0
Group 3: Wood duck, mergansers	BLM/FS	1	0	5	2	4	4	6	4	6	5
		2	16	23	18	24	21	29	22	29	27
		3	74	45	38	38	39	46	42	46	43
		4	10	19	28	23	26	15	24	15	19
		5	0	8	14	11	10	4	8	4	6
	CumEff	1	0	6	5	6	6	6	6	6	6
		2	16	18	15	18	18	23	17	24	22
		3	72	44	30	37	37	51	40	50	42
		4	12	24	31	21	22	17	22	17	18
		5	0	8	19	18	17	3	15	3	12
Group 4: Goldeneyes	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	50	34	12	40	33	53	32	53	38
		4	50	62	65	55	56	43	63	43	60
		5	0	4	23	5	11	4	5	4	2
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	51	30	15	34	28	46	27	48	36
		4	49	63	64	59	55	50	64	48	62
		5	0	7	21	7	17	4	9	4	2
Group 6: Harlequin duck	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	20	0	0	0	0	0	0	0	0
		3	40	0	0	0	0	60	0	60	19
		4	40	50	21	60	56	32	50	32	57
		5	0	50	79	40	44	8	50	8	24
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	20	0	0	0	0	0	0	0	0
		3	40	0	0	0	0	52	0	51	15
		4	40	41	17	57	49	34	47	34	59
		5	0	59	83	43	51	14	53	15	26

Habitat & Species Groups	Area[1]	Outcome[2]	Period H	C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
Group 7: Herons, egrets	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	80	68	55	71	69	74	68	74	68
		4	20	28	39	27	29	23	28	23	30
		5	0	4	6	2	2	3	4	3	2
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	82	67	53	68	66	68	65	69	64
		4	18	29	41	30	32	28	31	27	34
		5	0	4	6	2	2	4	4	4	2
Group 8: Dabbling ducks	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	18	4	3	5	4	12	4	12	5
		3	80	60	47	66	69	66	56	66	61
		4	2	35	45	28	26	22	40	22	34
		5	0	1	5	1	1	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	25	8	7	9	9	9	8	9	8
		3	75	58	43	57	57	63	52	63	56
		4	0	31	44	34	34	28	38	28	36
		5	0	3	6	0	0	0	2	0	0
Group 9: Spotted sandpiper	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	48	54	43	50	50	51	50	51	52
		3	52	46	51	50	50	49	50	49	48
		4	0	0	6	0	0	0	0	0	0
		5	0	0	0	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	52	54	51	58	58	59	58	59	60
		3	48	46	43	42	42	41	42	41	40
		4	0	0	6	0	0	0	0	0	0
		5	0	0	0	0	0	0	0	0	0
Group 10: Greater sandhill crane	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	11	10	3	5	5	10	5	10	5
		3	73	61	46	56	56	68	55	68	53
		4	16	29	51	39	39	23	40	23	43
		5	0	0	0	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	13	5	3	4	4	8	4	8	4
		3	71	63	45	55	55	70	54	70	51
		4	16	33	53	41	41	23	43	23	45
		5	0	0	0	0	0	0	0	0	0
Group 11: Rails, avocets	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	59	45	31	47	47	63	45	62	43
		4	41	55	60	52	52	37	54	38	56
		5	0	0	9	1	1	0	1	0	1
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	4	2	2	2	2	3	2	3	2
		3	64	50	34	52	52	69	48	68	50
		4	32	48	56	45	45	28	49	29	47
		5	0	0	8	1	1	0	1	0	1
Group 12: Curlew, willet	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	28	10	3	13	13	18	9	18	9
		4	73	90	95	88	88	83	91	83	89
		5	0	0	3	0	0	0	0	0	3

Table 5. Mean likelihood scores of viability outcomes for habitat and species groups of waterbirds and shorebirds for the UCRB Planning Area (continued).

Habitat & Species Groups	Area[1]	Outcome[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	33	14	5	16	16	24	13	24	13
		4	68	86	93	84	84	76	88	76	85
		5	0	0	3	0	0	0	0	0	3
Group 13: Upland sandpiper	BLM/FS[4]	1	0	0	0	0	0	0	0	0	0
		2	66	0	0	0	0	0	0	0	0
		3	34	0	0	0	0	0	0	0	0
		4	0	0	0	2	10	25	10	25	15
		5	0	100	100	98	90	75	90	75	85
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	66	0	0	0	0	0	0	0	0
		3	34	0	0	0	0	0	0	0	0
		4	0	0	0	2	2	12	0	12	2
		5	0	100	100	98	98	88	100	88	98
Group 14: Common snipe	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	20	12	9	16	16	20	10	20	15
		3	74	68	55	64	64	67	63	66	63
		4	6	20	34	20	20	13	27	14	22
		5	0	0	2	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	18	12	10	15	15	18	11	18	14
		3	76	66	53	64	64	68	61	67	62
		4	6	22	35	19	19	14	26	15	24
		5	0	0	2	2	2	0	2	0	0
Group 15: Migrant sandpipers	BLM/FS	1	28	12	5	12	12	22	6	22	12
		2	57	59	57	59	59	54	58	54	59
		3	15	29	36	29	29	24	36	24	29
		4	0	0	2	0	0	0	0	0	0
		5	0	0	0	0	0	0	0	0	0
	CumEff	1	35	24	13	25	25	25	14	25	22
		2	51	55	56	55	55	56	56	56	57
		3	14	21	29	20	20	19	30	19	21
		4	0	0	2	0	0	0	0	0	0
		5	0	0	0	0	0	0	0	0	0

Likelihood scores for each period or alternative sum to 100 points. High scores indicate high likelihood of an outcome. Means were calculated from the individual likelihood scores of panelists.

[1] Area: BLM/FS - Upper Columbia Basin planning area, BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[2] Outcome: 1 - contiguous; 2 - gaps; 3 - patchy; 4 - isolated; 5 - scarce. See text for complete explanation.

[3] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[4] Species for which panelists' scores were adjusted by Science Team. Scores were adjusted when considered to reflect a misinterpretation or incomplete understanding of the management alternatives or their outcomes, or the species ecology.

Table 6. Mean viability outcomes for habitat and species groups of waterbirds and shorebirds for the UCRB Planning Area.

Habitat & Species Group	Area[1]	Period H	Period C	Alternative[2] A1	A2	A3	A4	A5	A6	A7
Group 1: Open water birds	BLM/FS	3.2	3.5	3.8	3.4	3.4	3.3	3.6	3.3	3.3
	CumEff	3.1	3.4	3.7	3.4	3.4	3.2	3.5	3.2	3.3
Group 2: Common loon	BLM/FS	3.8	3.6	3.8	3.5	3.5	3.5	3.5	3.5	3.5
	CumEff	3.6	3.3	3.6	3.4	3.4	3.3	3.3	3.3	3.4
Group 3: Wood duck, mergansers	BLM/FS	2.9	3.0	3.3	3.1	3.2	2.8	3.1	2.8	2.9
	CumEff	3.0	3.1	3.4	3.3	3.3	2.9	3.2	2.9	3.1
Group 4: Goldeneyes	BLM/FS	3.5	3.7	4.1	3.7	3.8	3.5	3.7	3.5	3.6
	CumEff	3.5	3.8	4.1	3.7	3.9	3.6	3.8	3.6	3.7
Group 6: Harlequin duck	BLM/FS	3.2	4.5	4.8	4.4	4.4	3.5[3]	4.5	3.5[3]	4.1
	CumEff	3.2	4.6	4.8	4.4	4.5	3.6[3]	4.5	3.6[3]	4.1
Group 7: Herons, egrets	BLM/FS	3.2	3.4	3.5	3.3	3.3	3.3	3.4	3.3	3.3
	CumEff	3.2	3.4	3.5	3.3	3.4	3.4	3.4	3.4	3.4
Group 8: Dabbling ducks	BLM/FS	2.8	3.3	3.5	3.3	3.2	3.1	3.4	3.1	3.3
	CumEff	2.8	3.3	3.5	3.3	3.3	3.2	3.3	3.2	3.3
Group 9: Spotted sandpiper	BLM/FS	2.5	2.5	2.6	2.5	2.5	2.5	2.5	2.5	2.5
	CumEff	2.5	2.5	2.6	2.4	2.4	2.4	2.4	2.4	2.4
Group 10: Greater sandhill crane	BLM/FS	3.1	3.2	3.5	3.3	3.3	3.1	3.4	3.1	3.4
	CumEff	3.0	3.3	3.5	3.4	3.4	3.2	3.4	3.2	3.4
Group 11: Rails, avocets	BLM/FS	3.4	3.6	3.8	3.5	3.5	3.4	3.6	3.4	3.6
	CumEff	3.3	3.5	3.7	3.5	3.5	3.3	3.5	3.3	3.5
Group 12: Curlew, willet	BLM/FS	3.7	3.9	4.0	3.9	3.9	3.8	3.9	3.8	3.9
	CumEff	3.7	3.9	4.0	3.8	3.8	3.8	3.9	3.8	3.9
Group 13: Upland sandpiper	BLM/FS[4]	2.3	5.0	5.0	5.0	4.9	4.8	4.9	4.8	4.9
	CumEff	2.3	5.0	5.0	5.0	5.0	4.9	5.0	4.9	5.0
Group 14: Common snipe	BLM/FS	2.9	3.1	3.3	3.0	3.0	2.9	3.2	2.9	3.1
	CumEff	2.9	3.1	3.3	3.1	3.1	3.0	3.2	3.0	3.1
Group 15: Migrant sandpipers	BLM/FS	1.9	2.2	2.4	2.2	2.2	2.0	2.3	2.0	2.2
	CumEff	1.8	2.0	2.2	2.0	2.0	1.9	2.2	1.9	2.0

Mean outcomes were calculated as the weighted mean of average likelihood scores in each outcome.

[1] Area: BLM/FS - Upper Columbia Basin planning area, BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[2] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[3] Mean outcome for alternative departs form current outcome by greater than or equal to 0.50 units. Outcomes reported in table were rounded to 0.1 units; but, differences were calculated to 0.01 units. Hence, departure calculated from the table may be misleading.

[4] Species for which panelists' scores were adjusted by Science Team. Scores were adjusted when considered to reflect a misinterpretation or incomplete understanding of the management alternatives or their outcomes, or the species ecology.

Table 7. Mean likelihood scores of viability outcomes for raptors and gamebirds for the UCRB Planning Area.

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
GMB	Band-tailed pigeon	BLM/FS	1	0	0	0	0	0	0	0	0	4
			2	2	4	4	4	14	16	12	16	12
			3	22	22	36	36	30	29	30	29	30
			4	48	36	44	48	46	46	48	46	44
			5	28	38	16	12	10	9	10	9	10
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	2	2	2	2	16	16	16	16	16
			3	24	22	36	36	26	27	26	27	28
			4	47	36	44	48	46	46	46	46	44
			5	27	40	18	14	12	11	12	11	12
GMB	Blue grouse	BLM/FS	1	54	14	17	17	27	29	27	29	25
			2	44	50	41	43	55	54	55	54	57
			3	2	36	37	35	18	17	18	17	18
			4	0	0	5	5	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	56	14	17	17	27	29	27	27	25
			2	44	50	43	44	56	55	55	57	59
			3	0	36	40	39	17	16	18	16	16
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
GMB	Columbian sharp-tailed grouse	BLM/FS	1	62	0	0	0	0	0	0	0	0
			2	38	0	0	0	2	2	2	2	2
			3	0	2	2	2	14	16	14	16	6
			4	0	32	37	37	53	59	56	56	45
			5	0	66	61	61	31	23	28	26	47
		CumEff	1	66	0	0	0	0	0	0	0	0
			2	34	0	0	0	2	2	2	2	2
			3	0	2	2	2	16	24	16	24	12
			4	0	36	42	42	50	53	53	50	41
			5	0	62	56	56	32	21	29	24	45
GMB	Mountain quail	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	18	0	0	0	0	0	0	0	0
			3	38	0	2	2	8	12	6	13	8
			4	32	18	22	25	27	36	30	39	29
			5	12	82	76	73	65	52	64	48	63
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	24	0	0	0	0	0	0	0	0
			3	37	2	3	3	8	12	7	12	8
			4	35	22	24	29	32	43	32	47	33
			5	4	76	73	68	60	45	61	41	59
GMB	Sage grouse	BLM/FS	1	44	0	0	0	14	20	13	22	5
			2	52	18	10	18	22	42	30	43	41
			3	4	56	49	50	44	34	41	31	42
			4	0	24	39	30	20	4	16	4	12
			5	0	2	2	2	0	0	0	0	0
		CumEff	1	50	0	0	0	1	14	1	16	3
			2	47	22	10	18	33	48	40	49	42
			3	3	53	50	51	47	35	44	32	44
			4	0	23	38	29	19	3	15	3	11
			5	0	2	2	2	0	0	0	0	0
RAP	Bald eagle	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	32	6	10	15	15	19	15	19	16
			3	60	42	52	62	68	70	70	70	70
			4	8	42	30	23	17	11	15	11	14
			5	0	10	8	0	0	0	0	0	0

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	44	0	8	16	16	23	16	24	21
			3	50	45	49	58	64	66	66	65	66
			4	6	43	33	26	20	11	18	11	13
			5	0	12	10	0	0	0	0	0	0
RAP	Barred owl	BLM/FS	1	2	2	8	6	6	6	7	6	10
			2	18	32	51	50	51	50	56	48	62
			3	58	38	35	32	32	34	35	36	26
			4	22	28	6	12	11	10	2	10	2
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	2	12	6	10	10	10	10	8
			2	0	24	51	51	47	47	45	47	60
			3	0	34	31	31	31	33	33	34	22
			4	14	32	6	12	12	10	12	9	10
			5	86	8	0	0	0	0	0	0	0
RAP	Boreal owl	BLM/FS	1	2	0	2	2	2	2	2	2	3
			2	36	7	10	10	23	24	22	23	26
			3	36	42	34	36	37	36	36	39	40
			4	24	24	39	38	32	32	34	32	30
			5	2	27	15	14	6	6	6	4	1
		CumEff	1	0	0	2	2	2	2	2	2	3
			2	22	7	10	10	10	10	10	10	12
			3	38	40	36	36	44	45	44	47	49
			4	30	26	39	40	40	39	39	39	36
			5	10	27	13	12	4	4	5	2	0
RAP	Burrowing owl	BLM/FS	1	52	0	0	0	0	0	0	0	0
			2	42	36	32	32	34	39	36	41	35
			3	6	40	42	40	47	44	44	42	45
			4	0	20	20	22	19	17	20	17	20
			5	0	4	6	6	0	0	0	0	0
		CumEff	1	65	0	0	0	0	0	0	0	0
			2	31	40	34	34	34	38	36	40	35
			3	4	41	49	48	49	47	47	46	45
			4	0	19	15	16	17	15	17	14	20
			5	0	0	2	2	0	0	0	0	0
RAP	Cooper's hawk	BLM/FS	1	34	15	15	15	30	31	30	31	31
			2	50	36	34	38	40	50	40	50	40
			3	14	47	47	43	28	19	28	19	27
			4	2	2	4	4	2	0	2	0	2
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	38	16	16	16	31	32	31	32	32
			2	52	43	40	44	48	58	48	58	48
			3	10	41	42	38	21	10	21	10	20
			4	0	0	2	2	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
RAP	Ferruginous hawk	BLM/FS	1	2	0	0	0	0	0	0	0	0
			2	64	22	21	26	36	50	37	54	42
			3	34	58	59	56	59	48	58	44	54
			4	0	18	18	14	5	2	5	2	4
			5	0	2	2	4	0	0	0	0	0
		CumEff	1	6	0	0	0	0	0	0	0	0
			2	70	29	32	33	41	55	40	57	49
			3	24	66	66	65	59	45	60	43	51
			4	0	5	2	2	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0

Table 7. Mean likelihood scores of viability outcomes for raptors and gamebirds for the UCRB Planning Area (continued).

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
RAP	Flammulated owl	BLM/FS	1	1	0	0	0	0	0	0	0	0
			2	76	2	1	6	19	26	18	22	14
			3	21	40	20	32	56	60	56	62	51
			4	2	38	39	46	21	13	22	14	27
			5	0	20	40	16	4	1	4	2	8
		CumEff	1	1	0	0	0	0	0	0	0	0
			2	76	2	1	6	19	26	18	22	14
			3	21	40	20	32	56	60	56	62	51
			4	2	38	39	46	21	13	22	14	27
			5	0	20	40	16	4	1	4	2	8
RAP	Great gray owl	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	20	6	14	16	20	22	20	22	23
			3	62	46	44	45	56	56	55	56	43
			4	16	38	34	31	20	22	24	22	32
			5	2	10	8	8	4	0	1	0	2
		CumEff	1	2	0	0	0	0	0	0	0	0
			2	22	8	18	18	22	24	22	24	27
			3	58	44	39	41	52	52	51	52	38
			4	16	39	35	33	22	24	26	24	33
			5	2	9	8	8	4	0	1	0	2
RAP	Long-eared owl	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	21	8	6	5	11	15	11	14	6
			3	53	38	33	31	44	48	44	48	43
			4	21	45	48	49	40	33	40	33	44
			5	5	10	14	15	5	5	5	5	8
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	28	10	6	6	14	18	13	16	6
			3	50	48	43	39	46	50	48	51	48
			4	19	38	41	46	38	30	38	30	39
			5	4	5	10	9	3	3	3	3	8
RAP	Merlin	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	30	20	19	17	25	27	22	27	21
			3	51	53	48	46	53	53	55	53	57
			4	19	27	33	37	22	20	23	20	22
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	33	27	22	20	28	30	25	29	24
			3	53	50	53	52	52	51	54	52	56
			4	14	23	25	28	20	19	21	19	20
			5	0	0	0	0	0	0	0	0	0
RAP	Northern goshawk	BLM/FS	1	16	9	6	6	7	16	6	16	11
			2	56	38	33	34	41	47	42	49	49
			3	28	36	54	55	48	34	48	33	40
			4	0	17	7	5	4	3	4	2	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	20	10	8	8	10	20	9	20	14
			2	52	44	35	36	44	42	44	44	43
			3	28	32	53	53	44	37	45	35	42
			4	0	14	4	3	2	1	2	1	1
			5	0	0	0	0	0	0	0	0	0

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
RAP	Northern pygmy-owl	BLM/FS	1	68	46	38	48	54	61	54	61	51
			2	33	50	58	50	44	38	44	38	46
			3	0	4	5	3	3	1	3	1	3
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	69	48	39	49	55	63	55	63	53
			2	31	50	58	50	44	38	44	38	46
			3	0	3	4	1	1	0	1	0	1
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
RAP	Northern saw-whet owl	BLM/FS	1	73	39	32	36	51	58	51	63	51
			2	27	54	60	56	41	38	41	34	42
			3	0	7	8	8	8	4	8	3	7
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	76	40	32	36	51	59	51	64	52
			2	24	54	62	58	43	39	43	36	43
			3	0	6	6	6	6	2	6	0	5
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
RAP	Swainson's hawk	BLM/FS	1	23	32	32	32	35	35	35	35	31
			2	53	51	53	53	51	52	51	53	55
			3	20	17	15	15	14	13	14	12	14
			4	4	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	23	27	27	27	30	30	30	30	26
			2	53	51	53	53	54	55	54	56	58
			3	20	20	18	18	14	14	14	14	14
			4	4	2	2	2	2	1	2	0	2
			5	0	0	0	0	0	0	0	0	0
RAP	Western screech owl	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	56	33	22	31	36	46	38	47	43
			3	44	58	67	61	58	53	56	53	57
			4	0	9	11	8	6	1	6	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	59	31	22	32	37	47	40	49	45
			3	41	57	65	61	58	53	56	51	55
			4	0	12	13	7	5	0	4	0	0
			5	0	0	0	0	0	0	0	0	0

Likelihood scores for each period or alternatie sum to 100 points. High scores indicate high likelihood of an outcome. Means are calculated from the individual likelihood scores of panelists.

[1] Group: GMB - gamebird; RAP - raptor.

[2] Area: BLM/FS - Upper Columbia Basin planning area, BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[3] Outcome: 1 - contiguous; 2 - gaps; 3 - patchy; 4 - isolated; 5 - scarce. See text for complete explanation.

[4] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

Table 8. Mean viability outcomes for habitat and populations of raptors and gamebirds for the UCRB Planning Area.

Group[1]	Species Name	Area[2]	Period / Alternative[3] H	C	A1	A2	A3	A4	A5	A6	A7
GMB	Band-tailed pigeon	BLM/FS	4.0	4.1	3.7	3.7	3.5[4]	3.5[4]	3.6[4]	3.5[4]	3.4[4]
		CumEff	4.0	4.1	3.8	3.7	3.5[4]	3.5[4]	3.5[4]	3.5[4]	3.5[4]
GMB	Blue grouse	BLM/FS	1.5	2.2	2.3	2.3	1.9	1.9	1.9	1.9	1.9
		CumEff	1.4	2.2	2.2	2.2	1.9	1.9	1.9	1.9	1.9
GMB	Columbian sharp-tailed grouse	BLM/FS	1.4	4.6	4.6	4.6	4.1[4]	4.0[4]	4.1[4]	4.1[4]	4.4
		CumEff	1.3	4.6	4.5	4.5	4.1	3.9[4]	4.1[4]	4.0[4]	4.3
GMB	Mountain quail	BLM/FS	3.4	4.8	4.7	4.7	4.6	4.4	4.6	4.4	4.6
		CumEff	3.2	4.7	4.7	4.7	4.5	4.3	4.5	4.3	4.5
GMB	Sage grouse	BLM/FS	1.6	3.1	3.3	3.2	2.7	2.2[4]	2.6[4]	2.2[4]	2.6
		CumEff	1.5	3.1	3.3	3.2	2.8	2.3[4]	2.7	2.2[4]	2.6
RAP	Bald eagle	BLM/FS	2.8	3.6	3.4	3.1	3.0[4]	2.9[4]	3.0[4]	2.9[4]	3.0[4]
		CumEff	2.6	3.7	3.5	3.1[4]	3.0[4]	2.9[4]	3.0[4]	2.9[4]	2.9[4]
RAP	Barred owl	BLM/FS	3.0	2.9	2.4[4]	2.5	2.5	2.5	2.3[4]	2.5	2.2[4]
		CumEff	4.9	3.2	2.3[4]	2.5[4]	2.5[4]	2.4[4]	2.5[4]	2.4[4]	2.3[4]
RAP	Boreal owl	BLM/FS	2.9	3.7	3.6	3.5	3.2[4]	3.2[4]	3.2[4]	3.1[4]	3.0[4]
		CumEff	3.3	3.7	3.5	3.5	3.3	3.3	3.4	3.3	3.2[4]
RAP	Burrowing owl	BLM/FS	1.5	2.9	3.0	3.0	2.9	2.8	2.8	2.8	2.9
		CumEff	1.4	2.8	2.9	2.9	2.8	2.8	2.8	2.7	2.9
RAP	Cooper's hawk	BLM/FS	1.8	2.4	2.4	2.4	2.0	1.9	2.0	1.9	2.0
		CumEff	1.7	2.3	2.3	2.3	1.9	1.8	1.9	1.8	1.9
RAP	Ferruginous hawk	BLM/FS	2.3	3.0	3.0	3.0	2.7	2.5	2.7	2.5[4]	2.6
		CumEff	2.2	2.8	2.7	2.7	2.6	2.5	2.6	2.4	2.5
RAP	Flammulated owl	BLM/FS	2.2	3.8	4.2	3.7	3.1[4]	2.9[4]	3.1[4]	3.0[4]	3.3
		CumEff	2.2	3.8	4.2	3.7	3.1[4]	2.9[4]	3.1[4]	3.0[4]	3.3
RAP	Great gray owl	BLM/FS	3.0	3.5	3.4	3.3	3.1	3.0[4]	3.1	3.0[4]	3.1
		CumEff	2.9	3.5	3.3	3.3	3.1	3.0	3.1	3.0	3.1
RAP	Long-eared owl	BLM/FS	3.1	3.6	3.7	3.7	3.4	3.3	3.4	3.3	3.6
		CumEff	3.0	3.4	3.6	3.6	3.3	3.2	3.4	3.2	3.5
RAP	Merlin	BLM/FS	2.9	3.1	3.1	3.2	3.0	2.9	3.0	2.9	3.0
		CumEff	2.8	3.0	3.0	3.1	2.9	2.9	3.0	2.9	3.0
RAP	Northern goshawk	BLM/FS	2.1	2.6	2.6	2.6	2.5	2.2	2.5	2.2	2.3
		CumEff	2.1	2.5	2.5	2.5	2.4	2.2	2.4	2.2	2.3
RAP	Northern pygmy-owl	BLM/FS	1.3	1.6	1.7	1.6	1.5	1.4	1.5	1.4	1.5
		CumEff	1.3	1.6	1.7	1.5	1.5	1.4	1.5	1.4	1.5
RAP	Northern saw-whet owl	BLM/FS	1.3	1.7	1.8	1.7	1.6	1.5	1.6	1.4	1.6
		CumEff	1.2	1.7	1.7	1.7	1.6	1.4	1.6	1.4	1.5
RAP	Swainson's hawk	BLM/FS	2.1	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8
		CumEff	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.8	1.9
RAP	Western screech owl	BLM/FS	2.4	2.8	2.9	2.8	2.7	2.6	2.7	2.5	2.6
		CumEff	2.4	2.8	2.9	2.8	2.7	2.5	2.6	2.5	2.6

Mean outcomes were calculated as the weighted mean of average likelihood scores in each outcome.

[1] Group: GMB - gamebird; RAP - raptor.

[2] Area: BLM/FS - Upper Columbia Basin planning area. BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[3] Period / Alternative: H - historical pre-European settlement period: C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[4] Mean outcome for alternative departs from current outcome by greater than or equal to 0.50 units. Outcomes reported in table were rounded to 0.1 units; but, differences were calculated to 0.01 units. Hence, departure calculated from the table may be misleading.

Table 9. Mean likelihood scores of viability outcomes for woodpeckers, nuthatches, and swifts for the UCRB Planning Area.

Species Name	Area[1]	Outcome[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
Black-backed woodpecker	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	80	5	4	15	10	23	5	25	23
		3	20	80	16	70	64	68	44	65	73
		4	0	15	59	15	26	10	49	10	5
		5	0	0	21	0	0	0	3	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	80	0	0	8	5	13	0	15	15
		3	20	80	15	70	63	68	41	65	70
		4	0	20	59	23	33	20	54	20	15
		5	0	0	26	0	0	0	5	0	0
Downy woodpecker	BLM/FS[4]	1	25	0	0	0	0	0	0	0	0
		2	75	33	3	28	25	25	20	28	13
		3	0	68	75	68	70	73	58	70	80
		4	0	0	23	5	5	3	23	3	8
		5	0	0	0	0	0	0	0	0	0
	CumEff[4]	1	25	0	0	0	0	0	0	0	0
		2	75	30	3	28	25	25	20	28	13
		3	0	70	80	68	70	73	63	73	80
		4	0	0	18	5	5	3	18	0	8
		5	0	0	0	0	0	0	0	0	0
Hairy woodpecker	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	88	85	50	66	55	60	45	65	83
		3	13	15	50	34	45	40	55	35	18
		4	0	0	0	0	0	0	0	0	0
		5	0	0	0	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	88	85	45	55	60	63	45	65	75
		3	13	15	55	45	40	38	55	35	25
		4	0	0	0	0	0	0	0	0	0
		5	0	0	0	0	0	0	0	0	0
Lewis' woodpecker	BLM/FS	1	15	0	0	0	0	0	0	0	0
		2	45	15	0	0	0	45	0	40	35
		3	40	30	0	60	80	45	25	50	60
		4	0	55	50	40	20	10	50	10	5
		5	0	0	50	0	0	0	25	0	0
	CumEff	1	15	0	0	0	0	0	0	0	0
		2	15	15	0	0	0	0	0	0	0
		3	45	15	0	20	35	80	0	75	75
		4	25	30	25	60	55	20	45	25	25
		5	0	40	75	20	10	0	55	0	0
Pileated woodpecker	BLM/FS[4]	1	0	0	0	0	0	0	0	0	0
		2	25	15	0	0	0	50	0	50	45
		3	50	35	3	45	45	50	85	50	55
		4	25	50	97	55	55	0	10	0	0
		5	0	0	0	0	0	0	5	0	0

Table 9. Mean likelihood scores of viability outcomes for woodpeckers, nuthatches, and swifts for the UCRB Planning Area (continued).

Species Name	Area[1]	Outcome[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
	CumEff[4]	1	0	0	0	0	0	0	0	0	0
		2	25	15	0	0	0	50	0	50	45
		3	50	35	3	45	45	50	85	50	55
		4	25	50	97	55	55	0	10	0	0
		5	0	0	0	0	0	0	5	0	0
Pygmy nuthatch	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	88	3	0	18	15	40	15	40	20
		3	13	98	43	60	55	60	43	60	78
		4	0	0	55	23	30	0	43	0	3
		5	0	0	3	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	88	3	0	18	15	40	15	40	20
		3	13	98	43	60	55	60	43	60	78
		4	0	0	55	23	30	0	43	0	3
		5	0	0	3	0	0	0	0	0	0
Red-naped sapsucker	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	100	0	0	15	23	30	5	31	19
		3	0	75	45	73	65	70	58	69	56
		4	0	25	30	13	13	0	25	0	25
		5	0	0	25	0	0	0	13	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	100	0	0	10	18	25	3	26	14
		3	0	75	43	78	70	75	58	74	61
		4	0	25	33	13	13	0	28	0	25
		5	0	0	25	0	0	0	13	0	0
Three-toed woodpecker	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	45	10	0	8	10	5	0	13	15
		3	55	89	20	75	63	88	63	80	81
		4	0	1	59	18	28	8	38	8	4
		5	0	0	21	0	0	0	0	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	45	10	0	8	10	5	0	13	15
		3	55	88	20	75	63	88	63	80	81
		4	0	3	59	18	28	8	38	8	4
		5	0	0	21	0	0	0	0	0	0
Vaux's swift	BLM/FS[4]	1	0	0	0	0	0	0	0	0	0
		2	10	0	0	0	0	3	0	0	10
		3	23	20	0	50	20	27	0	7	87
		4	33	80	50	47	47	70	75	87	3
		5	33	0	50	3	33	0	25	7	0
	CumEff[4]	1	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0
		3	10	0	0	20	0	10	0	3	63
		4	57	87	25	65	47	70	50	90	33
		5	33	13	75	15	53	20	50	7	3
White-breasted nuthatch	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	83	10	0	7	10	27	0	40	23
		3	17	90	37	90	73	73	62	60	60
		4	0	0	63	3	17	0	38	0	17
		5	0	0	0	0	0	0	0	0	0

Species Name	Area[1]	Outcome[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	83	10	0	7	10	27	0	40	23
		3	17	90	37	90	73	73	62	60	60
		4	0	0	63	3	17	0	38	0	17
		5	0	0	0	0	0	0	0	0	0
White-headed woodpecker	BLM/FS[4]	1	0	0	0	0	0	0	0	0	0
		2	63	0	0	0	0	30	20	38	28
		3	38	33	2	30	33	70	30	63	43
		4	0	55	78	58	45	0	50	0	30
		5	0	13	20	13	23	0	0	0	0
	CumEff[4]	1	0	0	0	0	0	0	0	0	0
		2	63	0	0	0	0	25	18	15	25
		3	38	33	2	18	20	75	32	80	45
		4	0	55	70	70	58	0	50	5	30
		5	0	13	28	13	23	0	0	0	0
Williamson's sapsucker	BLM/FS	1	0	0	0	0	0	0	0	0	0
		2	88	5	0	8	10	23	5	20	25
		3	13	75	28	73	53	55	38	59	65
		4	0	20	58	20	36	23	54	21	10
		5	0	0	15	0	1	0	4	0	0
	CumEff	1	0	0	0	0	0	0	0	0	0
		2	88	5	0	8	10	23	5	20	25
		3	13	75	28	70	53	53	38	56	63
		4	0	20	55	23	34	25	54	24	13
		5	0	0	18	0	4	0	4	0	0

Likelihood scores for each period or alternative sum to 100 points. High scores indicate high likelihood of an outcome. Means are calculated from the individual likelihood scores of panelists.

[1] Area: BLM/FS - Upper Columbia Basin planning area. BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[2] Outcome: 1 - contiguous; 2 - gaps; 3 - patchy; 4 - isolated; 5 - scarce. See text for complete explanation.

[3] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[4] Species for which panelists' scores were adjusted by Science Team. Scores were adjusted when considered to reflect a misinterpretation or incomplete understanding of the management alternatives or their outcomes, or the species ecology.

Table 10. Mean viability outcomes for habitat and populations of cavity nesting woodpeckers, nuthatches and swifts for the UCRB Planning Area.

Species Name	Area[1]	Period / Alternative[2] H	C	A1	A2	A3	A4	A5	A6	A7
Black-backed woodpecker	BLM/FS	2.2	3.1	4.0[3]	3.0	3.2	2.9	3.5	2.9	2.9
	CumEff	2.2	3.2	4.1[3]	3.2	3.3	3.1	3.6	3.1	3.0
Downy woodpecker	BLM/FS[4]	1.8	2.7	3.2[3]	2.8	2.8	2.8	3.1	2.8	3.0
	CumEff[4]	1.8	2.7	3.2	2.8	2.8	2.8	3.0	2.8	3.0
Hairy woodpecker	BLM/FS	2.2	2.2	2.5	2.3	2.5	2.4	2.6	2.4	2.2
	CumEff	2.2	2.2	2.6	2.5	2.4	2.4	2.6	2.4	2.3
Lewis' woodpecker	BLM/FS	2.3	3.4	4.5[3]	3.4	3.2	2.7[3]	4.0[3]	2.7[3]	2.7[3]
	CumEff	2.8	4.0	4.8[3]	4.0	3.8	3.2[3]	4.6[3]	3.3[3]	3.3[3]
Pileated woodpecker	BLM/FS[4]	3.0	3.4	4.0[3]	3.6	3.6	2.5[3]	3.2	2.5[3]	2.6[3]
	CumEff[4]	3.0	3.4	4.0[3]	3.6	3.6	2.5[3]	3.2	2.5[3]	2.6[3]
Pygmy nuthatch	BLM/FS	2.2	3.0	3.6[3]	3.1	3.2	2.6	3.3	2.6	2.9
	CumEff	2.2	3.0	3.6[3]	3.1	3.2	2.6	3.3	2.6	2.9
Red-naped sapsucker	BLM/FS	2.0	3.3	3.8[3]	3.0	2.9	2.7[3]	3.5	2.7[3]	3.1
	CumEff	2.0	3.3	3.9[3]	3.1	3.0	2.8[3]	3.6	2.7[3]	3.1
Three-toed woodpecker	BLM/FS	2.6	2.9	4.0[3]	3.1	3.2	3.1	3.4[3]	3.0	2.9
	CumEff	2.6	3.0	4.0[3]	3.1	3.2	3.1	3.4[3]	3.0	2.9
Vaux's swift	BLM/FS[4]	3.9	3.8	4.5	3.5	4.1	3.7	4.3	4.0	2.9
	CumEff[4]	4.2	4.1	4.8	4.0	4.5	4.1	4.5	4.0	3.4
White-breasted nuthatch	BLM/FS	2.2	2.9	3.6[3]	3.0	3.1	2.7	3.4	2.6	2.9
	CumEff	2.2	2.9	3.6[3]	3.0	3.1	2.7	3.4	2.6	2.9
White-headed woodpecker	BLM/FS[4]	2.4	3.8	4.2	3.9	3.9	2.7[3]	3.3[3]	2.7[3]	3.1[3]
	CumEff[4]	2.4	3.8	4.3	4.0	4.1	2.8[3]	3.3[3]	2.9[3]	3.1[3]
Williamson's sapsucker	BLM/FS	2.2	3.2	3.9[3]	3.2	3.3	3.0	3.6	3.0	2.9
	CumEff	2.2	3.2	3.9[3]	3.2	3.4	3.1	3.6	3.0	2.9

Mean outcomes were calculated as the weighted mean of average likelihood scores in each outcome.

[1] Area: BLM/FS - Upper Columbia Basin planning area, BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[2] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[3] Mean outcome for alternative departs from current outcome by greater than or equal to 0.50 units. Outcomes reported in table were rounded to 0.1 units; but, differences were calculated to 0.01 units. Hence, departure calculated from the table may be misleading.

[4] Species for which panelists' scores were adjusted by Science Team. Scores were adjusted when considered to reflect a misinterpretation or incomplete understanding of the management alternatives or their outcomes, or the species ecology.

Table 11. Mean likelihood scores of viability outcomes for cuckoos, hummingbirds, and passerines for the UCRB Planning Area.

Group[1]	Species Name	Area[2]	Outcome[3]	Period		Alternative[4]						
				H	C	A1	A2	A3	A4	A5	A6	A7
FOR	Black-chinned hummingbird	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	23	0	0	0	0	13	0	15	13
			3	78	90	70	74	70	70	63	78	70
			4	0	10	30	26	30	18	35	8	18
			5	0	0	0	0	0	0	3	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	23	0	0	0	0	5	0	10	6
			3	78	85	53	60	53	63	48	68	65
			4	0	15	43	39	43	30	48	21	28
			5	0	0	5	1	5	3	5	1	1
FOR	Broad-tailed hummingbird	BLM/FS	1	3	0	0	0	0	0	0	00	
			2	58	3	0	3	0	13	0	14	8
			3	40	70	53	54	53	68	48	69	69
			4	0	28	43	44	48	20	48	18	24
			5	0	0	5	0	0	0	5	0	0
		CumEff	1	3	0	0	0	0	0	0	0	0
			2	58	0	0	3	0	5	0	6	5
			3	40	58	45	44	43	63	40	64	61
			4	0	40	51	51	55	33	53	30	34
			5	0	3	4	3	3	0	8	0	0
FOR	Chestnut-backed chickadee	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	17	0	0	20	20	20	0	20	37
			3	83	83	20	80	80	57	40	63	63
			4	0	17	80	0	0	23	60	17	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	17	0	0	20	20	20	0	20	37
			3	83	83	20	80	80	57	40	63	63
			4	0	17	80	0	0	23	60	17	0
			5	0	0	0	0	0	0	0	0	0
FOR	Hammond's flycatcher	BLM/FS	1	35	0	0	0	0	0	0	0	0
			2	65	0	0	0	0	20	0	25	23
			3	0	68	40	68	40	70	35	70	70
			4	0	33	55	33	55	10	55	5	8
			5	0	0	5	0	5	0	10	0	0
		CumEff	1	75	0	0	0	0	0	0	0	0
			2	25	0	0	0	0	10	0	15	13
			3	0	60	30	58	30	60	25	65	68
			4	0	40	60	38	60	30	55	20	20
			5	0	0	10	5	10	0	20	0	0
FOR	Lazuli bunting	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	64	44	36	40	40	52	27	52	51
			3	36	56	61	60	60	48	66	48	49
			4	0	0	3	0	0	0	7	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	64	26	16	21	17	28	14	28	28
			3	36	68	74	71	75	68	74	70	64
			4	0	6	10	8	8	4	12	2	8
			5	0	0	0	0	0	0	0	0	0

Table 11. Mean likelihood scores of viability outcomes for cuckoos, hummingbirds, and passerines for the UCRB Planning Area (continued).

Group[1]	Species Name	Area[2]	Outcome[3]	Period		Alternative[4]						
				H	C	A1	A2	A3	A4	A5	A6	A7
FOR	Olive-sided flycatcher	BLM/FS	1	80	0	0	0	0	0	0	0	0
			2	20	0	0	0	0	10	0	11	6
			3	0	84	61	65	67	79	56	80	82
			4	0	16	39	35	33	11	44	9	12
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	80	0	0	0	0	0	0	0	0
			2	20	0	0	0	0	0	0	0	0
			3	0	67	42	42	44	63	38	67	64
			4	0	33	58	58	56	37	60	33	36
			5	0	0	0	0	0	0	2	0	0
FOR	Rufous hummingbird	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	66	51	33	41	33	50	28	53	51
			3	34	49	48	49	54	50	49	48	49
			4	0	0	20	10	14	0	24	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	66	34	10	16	10	16	9	18	18
			3	34	59	50	55	50	65	45	64	64
			4	0	8	40	29	40	19	46	19	19
			5	0	0	0	0	0	0	0	0	0
FOR	Rufous-sided towhee	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	48	70	68	69	60	50	60	50	50
			3	52	30	32	31	40	50	40	50	50
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	48	63	64	63	60	49	58	48	48
			3	52	37	36	37	40	51	42	52	52
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
FOR	Western bluebird	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	88	3	10	25	38	63	38	73	43
			3	13	98	40	75	63	38	63	28	58
			4	0	0	40	0	0	0	0	0	0
			5	0	0	10	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	88	0	0	21	29	49	31	46	26
			3	13	98	40	71	69	36	66	46	54
			4	0	3	40	8	3	15	3	5	20
			5	0	0	20	0	0	0	0	3	0
FOR	Western tanager	BLM/FS	1	90	90	72	88	90	90	72	90	90
			2	10	10	28	12	10	10	28	10	10
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	88	88	46	56	58	58	44	58	58
			2	12	12	40	36	34	34	40	34	34
			3	0	0	14	8	8	8	16	8	8
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
FOR	White-winged crossbill	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	15
			3	100	100	65	100	95	85	65	100	85
			4	0	0	35	0	5	15	35	0	0
			5	0	0	0	0	0	0	0	0	0

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	10	10	0	10	0	15	0	18	35
			3	90	90	75	90	95	70	70	83	65
			4	0	0	25	0	5	15	30	0	0
			5	0	0	0	0	0	0	0	0	0
FOR	Wilson's warbler	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	80	61	45	52	49	59	33	64	74
			4	20	39	55	48	51	41	67	36	26
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	80	61	45	52	49	59	33	64	74
			4	20	39	55	48	51	41	67	36	26
			5	0	0	0	0	0	0	0	0	0
FOR	Winter wren	BLM/FS	1	10	0	0	0	0	0	0	0	0
			2	83	25	10	13	13	33	13	38	25
			3	8	68	55	58	58	55	41	51	49
			4	0	8	35	30	30	13	44	11	26
			5	0	0	0	0	0	0	3	0	0
		CumEff	1	10	0	0	0	0	0	0	0	0
			2	83	5	0	0	0	10	0	13	5
			3	8	63	30	35	38	50	31	51	43
			4	0	33	64	60	58	40	60	36	53
			5	0	0	6	5	5	0	9	0	0
GS	Black rosy finch	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	0	0	0	0	0	0	0	0	0
			4	100	100	100	100	100	100	100	100	100
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	0	0	0	0	0	0	0	0	0
			4	100	100	100	100	100	100	100	100	100
			5	0	0	0	0	0	0	0	0	0
GS	Bobolink	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	66	6	2	16	16	18	2	18	16
			4	34	62	50	56	56	64	48	66	56
			5	0	32	48	28	28	18	50	16	28
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	66	0	0	18	18	12	0	12	12
			4	34	64	46	53	53	58	44	59	53
			5	0	36	54	29	29	30	56	29	35
GS	Brewer's blackbird	BLM/FS	1	92	90	65	88	82	89	63	89	86
			2	8	10	29	12	18	11	31	11	14
			3	0	0	6	0	0	0	6	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	92	57	30	25	23	26	20	28	23
			2	8	33	54	53	53	52	54	50	53
			3	0	10	16	22	24	22	26	22	24
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
GS	Brewer's sparrow	BLM/FS	1	64	22	2	4	4	4	0	10	0
			2	36	60	26	26	26	30	26	34	27
			3	0	14	56	54	54	50	58	48	52
			4	0	4	16	16	16	16	16	8	21
			5	0	0	0	0	0	0	0	0	0

Table 11. Mean likelihood scores of viability outcomes for cuckoos, hummingbirds, and passerines for the UCRB Planning Area (continued).

Group[1]	Species Name	Area[2]	Outcome[3]	Period		Alternative[4]						
				H	C	A1	A2	A3	A4	A5	A6	A7
		CumEff	1	68	0	0	0	0	0	0	0	0
			2	32	47	8	9	8	12	7	17	10
			3	0	45	53	53	54	50	54	59	48
			4	0	8	39	38	38	38	39	24	40
			5	0	0	0	0	0	0	0	0	2
GS	Grasshopper sparrow	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	26	0	0	0	0	0	0	0	0
			3	66	6	6	6	4	16	6	28	15
			4	8	86	80	80	68	73	77	64	74
			5	0	8	14	14	28	11	17	8	11
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	40	0	0	0	0	2	0	2	0
			3	56	16	14	14	12	22	12	32	20
			4	4	82	84	84	72	74	86	66	80
			5	0	2	2	2	16	2	2	0	0
GS	Horned lark	BLM/FS	1	2	54	57	57	62	74	55	74	74
			2	42	46	43	43	38	26	45	26	26
			3	56	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	2	51	10	10	10	11	6	12	11
			2	42	49	48	48	48	49	50	48	49
			3	56	0	42	42	42	40	44	40	40
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
GS	Lark sparrow	BLM/FS	1	60	20	2	4	4	4	0	10	0
			2	40	62	26	26	26	30	26	34	27
			3	0	14	56	54	54	50	58	48	52
			4	0	4	16	16	16	16	16	8	21
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	64	0	0	0	0	0	0	0	0
			2	36	47	8	9	8	12	7	17	10
			3	0	45	53	53	54	50	54	57	54
			4	0	8	39	38	38	38	39	26	34
			5	0	0	0	0	0	0	0	0	2
GS	Loggerhead shrike	BLM/FS	1	34	11	1	3	3	3	1	4	2
			2	66	48	31	31	31	31	29	37	30
			3	0	41	43	41	41	41	45	43	38
			4	0	0	25	25	25	25	25	16	30
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	34	8	0	0	0	0	0	0	0
			2	66	28	10	10	10	14	12	16	10
			3	0	40	42	40	40	55	34	34	29
			4	0	22	46	48	48	31	50	50	58
			5	0	2	2	2	2	0	4	0	3
GS	Sage sparrow	BLM/FS	1	77	66	7	8	8	10	4	13	2
			2	23	34	41	40	40	44	39	47	42
			3	0	0	46	46	46	40	51	36	48
			4	0	0	6	6	6	6	6	4	8
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	81	2	0	0	0	0	0	0	0
			2	19	58	19	19	18	22	17	29	20
			3	0	34	53	53	54	50	54	59	50
			4	0	6	28	28	28	28	29	12	30
			5	0	0	0	0	0	0	0	0	0

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
GS	Sage thrasher	BLM/FS	1	64	40	2	4	4	4	0	10	0
			2	36	44	26	26	26	30	26	34	27
			3	0	12	56	54	54	50	58	48	52
			4	0	4	16	16	16	16	16	8	21
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	68	0	0	0	0	0	0	0	0
			2	32	51	10	13	12	15	10	19	12
			3	0	43	56	55	55	54	56	58	51
			4	0	6	34	32	33	31	34	23	35
			5	0	0	0	0	0	0	0	0	2
GS	Vesper sparrow	BLM/FS	1	80	66	30	30	30	35	28	40	30
			2	20	34	54	54	54	51	52	52	54
			3	0	0	16	16	16	14	20	8	16
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	86	40	4	4	4	6	4	10	4
			2	14	48	53	53	53	55	50	58	53
			3	0	12	43	43	43	39	46	32	43
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
GS	Western meadowlark	BLM/FS	1	92	90	60	60	60	70	56	75	60
			2	8	10	40	40	40	30	44	25	40
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	92	90	41	41	41	49	37	55	43
			2	8	10	59	59	59	51	63	45	57
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
RIP	Red-eyed vireo	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	65	45	38	54	54	56	29	59	53
			4	35	55	63	46	46	44	71	41	48
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	75	38	26	35	35	39	19	44	44
			4	25	63	74	65	65	61	81	56	56
			5	0	0	0	0	0	0	0	0	0
RIP	Red-winged blackbird	BLM/FS	1	2	0	0	0	0	0	0	0	0
			2	84	56	34	70	70	71	40	67	73
			3	14	44	66	30	30	29	60	33	27
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	2	0	0	0	0	0	0	0	0
			2	84	50	12	26	26	27	12	29	29
			3	14	50	67	62	62	62	67	60	60
			4	0	0	21	12	12	11	21	11	11
			5	0	0	0	0	0	0	0	0	0
RIP	Veery	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	62	6	5	9	7	10	7	10	10
			3	38	61	53	61	56	66	50	69	64
			4	0	33	42	30	37	24	43	21	26
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	62	4	2	3	3	6	2	6	4
			3	38	41	32	42	43	47	33	53	46
			4	0	55	66	55	54	47	65	41	50
			5	0	0	0	0	0	0	0	0	0

Table 11. Mean likelihood scores of viability outcomes for cuckoos, hummingbirds, and passerines for the UCRB Planning Area (continued).

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
RIP	Willow flycatcher	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	44	2	0	2	0	2	0	2	2
			3	56	56	42	51	45	54	40	58	55
			4	0	42	58	47	55	44	60	40	43
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	58	0	0	0	0	0	0	0	0
			3	42	42	27	40	32	42	29	41	42
			4	0	58	73	60	68	58	71	59	58
			5	0	0	0	0	0	0	0	0	0
RIP	Yellow warbler	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	60	0	0	0	0	0	0	0	0
			3	40	64	50	59	62	70	48	72	67
			4	0	36	50	41	38	30	52	28	33
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	62	0	0	0	0	0	0	0	0
			3	38	49	33	42	43	53	26	57	49
			4	0	51	67	58	57	47	74	43	51
			5	0	0	0	0	0	0	0	0	0
RIP	Yellow-billed cuckoo	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	66	0	0	0	0	0	0	0	0
			4	34	54	28	48	48	53	5	54	45
			5	0	46	73	53	53	48	95	46	55
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	69	0	0	0	0	0	0	0	0
			4	31	13	11	26	26	29	0	31	28
			5	0	88	89	74	74	71	100	69	73
RIP	Yellow-breasted chat	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	55	0	0	0	0	0	0	0	0
			3	45	49	44	56	46	63	40	66	61
			4	0	51	56	44	54	38	60	34	39
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	60	0	0	0	0	0	0	0	0
			3	40	36	30	41	34	50	28	53	50
			4	0	64	70	59	66	50	73	48	50
			5	0	0	0	0	0	0	0	0	0
WD	Ash-throated flycatcher	BLM/FS	1	15	24	10	10	0	0	0	0	5
			2	61	64	56	56	13	13	10	29	46
			3	24	13	31	31	50	50	45	39	36
			4	0	0	3	3	33	33	40	33	13
			5	0	0	0	0	5	5	5	0	0
		CumEff	1	15	24	5	5	0	0	0	3	0
			2	61	64	53	53	20	23	13	41	39
			3	24	13	35	35	54	54	50	39	43
			4	0	0	8	8	26	24	38	13	19
			5	0	0	0	0	0	0	0	5	0
WD	Bushtit	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	25	15	15	25	0	25	0	0
			3	65	65	55	55	65	50	55	50	60
			4	35	10	30	30	10	50	20	50	40
			5	0	0	0	0	0	0	0	0	0

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	25	15	15	25	0	25	0	0
			3	65	65	55	55	65	50	55	50	60
			4	35	10	30	30	10	50	20	50	40
			5	0	0	0	0	0	0	0	0	0
WD	Chipping sparrow	BLM/FS	1	95	93	93	93	93	95	93	95	95
			2	5	8	8	8	8	5	8	5	5
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	95	86	60	61	61	64	60	66	64
			2	5	14	40	39	39	36	40	34	36
			3	0	0	0	0	0	0	0	0	0
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
WD	Green-tailed towhee	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	35	58	26	50	50	56	26	55	49
			3	65	43	71	50	50	44	71	45	51
			4	0	0	3	0	0	0	3	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	35	58	26	50	50	56	26	55	49
			3	65	43	71	50	50	44	71	45	51
			4	0	0	3	0	0	0	3	0	0
			5	0	0	0	0	0	0	0	0	0

Likelihood scores for each period or alternative sum to 100 points. High scores indicate high likelihood of an outcome. Means are calculated from the individual likelihood scores of panelists.

[1] Group: FOR - forest birds; GS - grassland/shrub birds; RIP - riparian birds; WD - woodland birds.

[2] Area: BLM/FS - Upper Columbia Basin planning area, BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[3] Outcome: 1 - contiguous; 2 - gaps; 3 - patchy; 4 - isolated; 5 - scarce. See text for complete explanation.

[4] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

Table 12. Mean viability outcomes for habitat and populations of cuckoos, hummingbirds, and passerines for the UCRB Planning Area.

Group[1]	Species Name	Area[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
FOR	Black-chinned hummingbird	BLM/FS	2.8	3.1	3.3	3.3	3.3	3.1	3.4	3.0	3.1
		CumEff	2.8	3.2	3.6	3.4	3.6	3.3	3.6	3.1	3.2
FOR	Broad-tailed hummingbird	BLM/FS	2.4	3.3	3.6	3.4	3.5	3.1	3.6	3.1	3.2
		CumEff	2.4	3.5	3.6	3.6	3.6	3.3	3.7	3.2	3.3
FOR	Chestnut-backed chickadee	BLM/FS	2.8	3.2	3.8	2.8	2.8	3.0	3.6	3.0	2.6
		CumEff	2.8	3.2	3.8	2.8	2.8	3.0	3.6	3.0	2.6
FOR	Hammond's flycatcher	BLM/FS	1.7	3.4	3.7	3.4	3.7	2.9	3.8	2.8[4]	2.9
		CumEff	1.3	3.4	3.8	3.5	3.8	3.2	4.0[4]	3.1	3.1
FOR	Lazuli bunting	BLM/FS	2.4	2.6	2.7	2.6	2.6	2.5	2.8	2.5	2.5
		CumEff	2.4	2.8	2.9	2.9	2.9	2.8	3.0	2.7	2.8
FOR	Olive-sided flycatcher	BLM/FS	1.2	3.2	3.4	3.4	3.3	3.0	3.4	3.0	3.1
		CumEff	1.2	3.3	3.6	3.6	3.6	3.4	3.6	3.3	3.4
FOR	Rufous hummingbird	BLM/FS	2.3	2.5	2.9	2.7	2.8	2.5	3.0[4]	2.5	2.5
		CumEff	2.3	2.8	3.3[4]	3.1	3.3[4]	3.0	3.4[4]	3.0	3.0
FOR	Rufous-sided towhee	BLM/FS	2.5	2.3	2.3	2.3	2.4	2.5	2.4	2.5	2.5
		CumEff	2.5	2.4	2.4	2.4	2.4	2.5	2.4	2.5	2.5
FOR	Western bluebird	BLM/FS	2.2	3.0	3.5[4]	2.8	2.7	2.4[4]	2.7	2.3[4]	2.6
		CumEff	2.2	3.1	3.8[4]	2.9	2.8	2.7	2.7	2.7	2.9
FOR	Western tanager	BLM/FS	1.1	1.1	1.3	1.1	1.1	1.1	1.3	1.1	1.1
		CumEff	1.1	1.1	1.7[4]	1.5	1.5	1.5	1.7[4]	1.5	1.5
FOR	White-winged crossbill	BLM/FS	3.0	3.0	3.4	3.0	3.1	3.2	3.4	3.0	2.9
		CumEff	2.9	2.9	3.3	2.9	3.1	3.0	3.3	2.9	2.7
FOR	Wilson's warbler	BLM/FS	3.2	3.4	3.6	3.5	3.5	3.4	3.7	3.4	3.3
		CumEff	3.2	3.4	3.6	3.5	3.5	3.4	3.7	3.4	3.3
FOR	Winter wren	BLM/FS	2.0	2.9	3.3	3.2	3.2	2.8	3.4[4]	2.7	3.0
		CumEff	2.0	3.3	3.8	3.7	3.7	3.3	3.8	3.2	3.5
GS	Black rosy finch	BLM/FS	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
		CumEff	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
GS	Bobolink	BLM/FS	3.3	4.3	4.5	4.1	4.1	4.0	4.5	4.0	4.1
		CumEff	3.3	4.4	4.5	4.1	4.1	4.2	4.6	4.2	4.2
GS	Brewer's blackbird	BLM/FS	1.1	1.1	1.4	1.1	1.2	1.1	1.4	1.1	1.1
		CumEff	1.1	1.5	1.9	2.0	2.0	2.0	2.1[4]	1.9	2.0
GS	Brewer's sparrow	BLM/FS	1.4	2.0	2.9[4]	2.8[4]	2.8[4]	2.8[4]	2.9[4]	2.5[4]	2.9[4]
		CumEff	1.3	2.6	3.3[4]	3.3[4]	3.3[4]	3.3[4]	3.34	3.1	3.3[4]
GS	Grasshopper sparrow	BLM/FS	2.8	4.0	4.1	4.1	4.2	4.0	4.1	3.8	4.0
		CumEff	2.6	3.9	3.9	3.9	4.0	3.8	3.9	3.6	3.8
GS	Horned lark	BLM/FS	2.5	1.5	1.4	1.4	1.4	1.3	1.5	1.3	1.3
		CumEff	2.5	1.5	2.3[4]	2.3[4]	2.3[4]	2.3[4]	2.4[4]	2.3[4]	2.3[4]
GS	Lark sparrow	BLM/FS	1.4	2.0	2.9[4]	2.8[4]	2.8[4]	2.8[4]	2.9[4]	2.5[4]	2.9[4]
		CumEff	1.4	2.6	3.3[4]	3.3[4]	3.3[4]	3.3[4]	3.3[4]	3.1[4]	3.3[4]

Group[1]	Species Name	Area[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
GS	Loggerhead shrike	BLM/FS	1.7	2.3	2.9[4]	2.9[4]	2.9[4]	2.9[4]	2.9[4]	2.7	3.0[4]
		CumEff	1.7	2.8	3.4[4]	3.4[4]	3.4[4]	3.2	3.5[4]	3.3[4]	3.5[4]
GS	Sage sparrow	BLM/FS	1.2	1.3	2.5[4]	2.5[4]	2.5[4]	2.4[4]	2.6[4]	2.3[4]	2.6[4]
		CumEff	1.2	2.4	3.1[4]	3.1[4]	3.1[4]	3.1[4]	3.1[4]	2.8	3.1[4]
GS	Sage thrasher	BLM/FS	1.4	1.8	2.9[4]	2.8[4]	2.8[4]	2.8[4]	2.9[4]	2.5[4]	2.9
		CumEff	1.3	2.6	3.2[4]	3.2[4]	3.2[4]	3.2[4]	3.2[4]	3.0	3.3[4]
GS	Vesper sparrow	BLM/FS	1.2	1.3	1.9[4]	1.9[4]	1.9[4]	1.8	1.9[4]	1.7	1.9[4]
		CumEff	1.1	1.7	2.4[4]	2.4[4]	2.4[4]	2.3[4]	2.4[4]	2.2[4]	2.4[4]
GS	Western meadowlark	BLM/FS	1.1	1.1	1.4	1.4	1.4	1.3	1.4	1.3	1.4
		CumEff	1.1	1.1	1.6	1.6	1.6	1.5	1.6[4]	1.5	1.6
RIP	Red-eyed vireo	BLM/FS	3.4	3.6	3.7	3.5	3.5	3.4	3.7	3.4	3.5
		CumEff	3.3	3.7	3.7	3.7	3.7	3.6	3.8	3.6	3.6
RIP	Red-winged blackbird	BLM/FS	2.1	2.4	2.7	2.3	2.3	2.3	2.6	2.3	2.3
		CumEff	2.1	2.5	3.1[4]	2.9	2.9	2.8	3.1[4]	2.8	2.8
RIP	Veery	BLM/FS	2.4	3.3	3.4	3.2	3.3	3.1	3.4	3.1	3.2
		CumEff	2.4	3.5	3.6	3.5	3.5	3.4	3.6	3.4	3.5
RIP	Willow flycatcher	BLM/FS	2.6	3.4	3.6	3.5	3.6	3.4	3.6	3.4	3.4
		CumEff	2.4	3.6	3.7	3.6	3.7	3.6	3.7	3.6	3.6
RIP	Yellow warbler	BLM/FS	2.4	3.4	3.5	3.4	3.4	3.3	3.5	3.3	3.3
		CumEff	2.4	3.5	3.7	3.6	3.6	3.5	3.7	3.4	3.5
RIP	Yellow-billed cuckoo	BLM/FS	3.3	4.5	4.8	4.6	4.6	4.5	5.0	4.5	4.6
		CumEff	3.3	4.9	4.9	4.7	4.7	4.7	5.0	4.7	4.8
RIP	Yellow-breasted chat	BLM/FS	2.5	3.5	3.6	3.4	3.5	3.4	3.6	3.3	3.4
		CumEff	2.4	3.6	3.7	3.6	3.7	3.5	3.8	3.5	3.5
WD	Ash-throated flycatcher	BLM/FS	2.1	1.9	2.3	2.3	3.3[4]	3.3[4]	3.4[4]	3.1[4]	2.6[4]
		CumEff	2.1	1.9	2.5[4]	2.5[4]	3.1[4]	3.0[4]	3.3[4]	2.8[4]	2.8[4]
WD	Bushtit	BLM/FS	3.4	2.9	3.2	3.2	2.9	3.5[4]	3.0	3.5[4]	3.4[4]
		CumEff	3.4	2.9	3.2	3.2	2.9	3.5[4]	3.0	3.5[4]	3.4[4]
WD	Chipping sparrow	BLM/FS	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
		CumEff	1.1	1.1	1.4	1.4	1.4	1.4	1.4	1.3	1.4
WD	Green-tailed towhee	BLM/FS	2.7	2.5	2.8	2.5	2.5	2.4	2.8	2.5	2.5
		CumEff	2.7	2.5	2.8	2.5	2.5	2.4	2.8	2.5	2.5

Mean outcomes were calculated as the weighted mean of average likelihood scores in each outcome.

[1] Group: FOR - forest birds; GS - grassland/shrub birds; RIP - riparian birds; WD - woodland birds.

[2] Area: BLM/FS - Upper Columbia Basin planning area. BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[3] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[4] Mean outcome for alternative departs from current outcome by greater than or equal to 0.50 units. Outcomes reported in table were rounded to 0.1 units; but, differences were calculated to 0.01 units. Hence, departure calculated from the table may be misleading.

Table 13. Mean likelihood scores of viability outcomes for bats and small mammals for the UCRB Planning Area.

Group[1]	Species Name	Area[2]	Outcome[3]	Period		Alternative[4]						
				H	C	A1	A2	A3	A4	A5	A6	A7
BAT	Fringed myotis	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	28	0	0	1	0	5	0	8	7
			3	70	33	17	43	32	48	30	54	45
			4	2	60	48	50	57	45	46	36	42
			5	0	7	35	6	11	2	24	2	6
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	35	0	0	0	0	0	0	0	0
			3	63	22	0	0	0	3	0	15	10
			4	2	65	22	43	40	47	35	53	43
			5	0	13	78	57	60	50	65	32	47
BAT	Hoary bat	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	78	4	0	6	0	14	0	24	20
			3	22	70	45	40	48	49	40	44	30
			4	0	24	48	42	33	33	46	26	36
			5	0	2	7	12	19	4	14	6	14
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	78	0	0	0	0	0	0	0	0
			3	22	56	5	8	8	20	8	36	17
			4	0	30	40	50	40	54	31	43	53
			5	0	14	55	42	52	26	61	21	30
BAT	Long-eared myotis	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	62	0	0	5	0	5	0	15	10
			3	38	50	37	47	46	55	40	50	50
			4	0	44	57	37	47	35	48	30	30
			5	0	6	6	11	7	5	12	5	10
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	62	0	0	0	0	0	0	0	0
			3	38	28	8	10	10	19	10	29	21
			4	0	56	39	43	45	48	36	42	49
			5	0	16	53	47	45	33	54	29	30
BAT	Long-legged myotis	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	65	0	0	5	0	11	0	16	13
			3	35	44	35	44	54	60	45	64	50
			4	0	46	46	45	36	25	50	18	30
			5	0	10	19	6	10	4	5	2	7
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	65	0	0	0	0	0	0	0	0
			3	35	23	0	5	5	5	0	19	15
			4	0	58	31	41	44	59	30	50	53
			5	0	20	69	54	51	36	70	31	33
BAT	Pale western big-eared bat	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	6	0	0	0	0	0	0	0	0
			3	78	12	2	12	12	13	8	35	30
			4	14	72	54	78	64	79	58	61	59
			5	2	16	44	10	24	8	34	4	11
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	6	0	0	0	0	0	0	0	0
			3	78	12	0	0	0	2	0	5	3
			4	14	70	25	39	45	44	20	59	41
			5	2	18	75	61	55	54	80	36	56
BAT	Silver-haired bat	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	52	2	0	5	8	18	8	22	10
			3	46	54	34	60	62	61	41	65	62
			4	2	44	44	29	26	17	31	10	25
			5	0	0	22	6	4	4	20	3	3

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	60	0	0	0	0	2	0	7	0
			3	40	40	7	19	16	26	8	40	18
			4	0	46	43	45	37	33	36	37	43
			5	0	14	50	36	47	39	56	16	39
BAT	Spotted bat	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	5	5	3	3	0	3	0	3	5
			4	90	75	58	65	53	68	45	75	75
			5	5	20	40	33	48	30	55	23	20
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	5	0	0	0	0	0	0	0	0
			4	90	60	45	50	35	55	33	65	55
			5	5	40	55	50	65	45	68	35	45
BAT	Western small-footed myotis	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	80	0	0	10	0	0	0	10	10
			3	20	70	0	60	50	50	0	60	60
			4	0	30	70	20	30	30	70	20	30
			5	0	0	30	10	20	20	30	10	0
SMM	Northern flying squirrel	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	90	15	0	21	16	25	5	28	26
			3	10	40	40	45	45	53	50	55	55
			4	0	33	32	30	30	20	25	15	10
			5	0	13	28	4	9	2	20	2	9
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	83	10	0	0	0	0	0	0	0
			3	18	45	5	13	10	20	10	25	20
			4	0	33	46	53	51	45	43	49	49
			5	0	13	49	35	39	35	48	26	31
SMM	Pygmy rabbit	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	40	0	0	0	0	0	0	0	0
			4	50	50	50	50	50	50	50	50	50
			5	10	50	50	50	50	50	50	50	50
SMM	White-tailed jackrabbit	BLM/FS	1	20	0	0	0	0	0	0	0	0
			2	80	20	20	20	20	20	20	20	20
			3	0	80	80	80	80	80	80	80	80
			4	0	0	0	0	0	0	0	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	20	0	0	0	0	0	0	0	0
			2	80	10	10	10	10	10	10	10	10
			3	0	20	20	20	20	20	20	20	20
			4	0	60	60	60	60	60	60	60	60
			5	0	10	10	10	10	10	10	10	10

Likelihood scores for each period or alternative sum to 100 points. High scores indicate high likelihood of an outcome. Means are calculated from the individual likelihood scores of panelists.

[1] Group: BAT -bat; SMM - small mammal.

[2] Area: BLM/FS - Upper Columbia Basin planning area, BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[3] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[4] Outcome: 1 - contiguous; 2 - gaps; 3 - patchy; 4 - isolated; 5 - scarce. See text for complete explanation.

[5] Species for which panelists' scores were adjusted by Science Team. Scores were adjusted when considered to reflect a misinterpretation or incomplete understanding of the management alternatives or their outcomes, or the species ecology.

Table 14. Mean viability outcomes for habitat and populations of bats and small mammals for the UCRB Planning Area.

Group[1]	Species Name	Area[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
BAT	Fringed myotis	BLM/FS[4]	2.7	3.7	4.2	3.6	3.8	3.4	3.9	3.3	3.5
		CumEff	2.7	3.9	4.8[5]	4.6[5]	4.6[5]	4.5[5]	4.7[5]	4.2	4.4
BAT	Hoary bat	BLM/FS[4]	2.2	3.2	3.6	3.6	3.7	3.3	3.7[5]	3.1	3.4
		UCRB CumEff	2.2	3.6	4.5[5]	4.3[5]	4.4[5]	4.1	4.5[5]	3.9	4.1[5]
BAT	Long-eared myotis	BLM/FS[4]	2.4	3.6	3.7	3.5	3.6	3.4	3.7	3.3	3.4
		CumEff	2.4	3.9	4.5[5]	4.4	4.4	4.1	4.4[5]	4.0	4.1
BAT	Long-legged myotis	BLM/FS[4]	2.4	3.7	3.8	3.5	3.6	3.2	3.6	3.1	3.3
		CumEff	2.4	4.0	4.7[5]	4.5	4.5	4.3	4.7[5]	4.1	4.2
BAT	Pale western	BLM/FS[4]	3.1	4.0	4.4	4.0	4.1	4.0	4.3	3.7	3.8
		CumEff	3.1	4.1	4.8[5]	4.6[5]	4.6	4.5	4.8[5]	4.3	4.5
BAT	Silver-haired bat	BLM/FS[4]	2.5	3.4	3.9	3.4	3.3	3.1	3.6	2.9	3.2
		CumEff	2.4	3.7	4.4[5]	4.2	4.3[5]	4.1	4.5[5]	3.6	4.2
BAT	Spotted bat	BLM/FS[4]	4.0	4.2	4.4	4.3	4.5	4.3	4.6	4.2	4.2
		CumEff	4.0	4.4	4.6	4.5	4.7	4.5	4.7	4.4	4.5
BAT	Western small-footed myotis	BLM/FS[4]	2.2	3.3	4.3[5]	3.3	3.7	3.7	4.3[5]	3.3	3.2
SMM	Northern flying squirrel	BLM/FS[4]	2.1	3.5	3.9	3.2	3.3	3.0	3.6	2.9[5]	3.0
		CumEff	2.2	3.5	4.4[5]	4.3[5]	4.3[5]	4.2[5]	4.4[5]	4.0	4.1[5]
SMM	Pygmy rabbit	BLM/FS	3.7	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
SMM	White-tailed jackrabbit	BLM/FS	1.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
		CumEff	1.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

Mean outcomes were calculated as the weighted mean of average likelihood scores in each outcome.

[1] Group: BAT - bat; SMM - small mammal.

[2] Area: BLM/FS - Upper Columbia Basin planning area, BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[3] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[4] Species for which panelists' scores were adjusted by Science Team. Scores were adjusted when considered to reflect a misinterpretation or incomplete understanding of the management alternatives or their outcomes, or the species ecology.

[5] Mean outcome for alternative departs from current outcome by greater than or equal to 0.50 units. Outcomes reported in table were rounded to 0.1 units; but, differences were calculated to 0.01 units. Hence, departure calculated from the table may be misleading.

Table 15. Mean likelihood scores of viability outcomes carnivores and ungulates for the UCRB Planning Area.

Group[1]	Species Name	Area[2]	Outcome[3]	Period		Alternative[4]						
				H	C	A1	A2	A3	A4	A5	A6	A7
CAR	American marten	BLM/FS[5]	1	24	0	0	0	0	0	0	0	0
			2	42	12	2	6	6	20	12	20	40
			3	34	34	17	28	28	60	35	60	50
			4	0	26	41	40	40	20	27	20	10
			5	0	28	40	26	26	0	26	0	0
		CumEff[5]	1	24	0	0	0	0	0	0	0	0
			2	42	4	0	2	2	2	2	4	6
			3	34	16	16	18	18	21	13	25	44
			4	0	30	27	31	31	39	31	37	37
			5	0	50	57	49	49	38	54	34	13
CAR	Fisher	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	40	0	0	0	0	0	0	0	0
			3	40	40	20	70	70	70	40	70	20
			4	20	40	50	20	20	20	40	20	50
			5	0	20	30	10	10	10	20	10	30
		CumEff[5]	1	0	0	0	0	0	0	0	0	0
			2	40	0	0	0	0	0	0	0	0
			3	40	2	3	0	0	1	0	5	16
			4	20	14	22	34	23	31	23	34	43
			5	0	84	75	66	77	68	77	61	41
CAR	Gray wolf	BLM/FS	1	68	22	18	22	18	22	16	24	36
			2	30	43	44	43	44	43	44	42	39
			3	2	35	34	35	34	35	36	34	25
			4	0	0	4	0	4	0	4	0	0
			5	0	0	0	0	0	0	0	0	0
		CumEff	1	68	4	0	0	0	0	0	0	0
			2	30	4	0	1	0	1	0	2	3
			3	2	4	8	9	10	9	8	9	16
			4	0	42	46	46	44	46	46	46	50
			5	0	46	46	44	46	44	46	43	31
CAR	Grizzly bear	BLM/FS	1	62	8	4	4	4	5	4	8	10
			2	32	4	6	8	6	6	6	6	4
			3	6	10	6	6	6	6	6	4	16
			4	0	38	44	42	44	43	44	42	40
			5	0	40	40	40	40	40	40	40	30
		CumEff	1	58	0	0	0	0	0	0	0	2
			2	32	0	0	0	0	0	0	4	4
			3	10	4	2	3	3	4	2	6	6
			4	0	8	10	9	9	8	10	4	8
			5	0	88	88	88	88	88	88	86	80
CAR	Lynx	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	10	0	0	0	4	0	0	4	2
			3	80	12	0	0	8	0	3	25	20
			4	10	40	50	50	42	42	22	40	44
			5	0	48	50	50	46	58	75	31	34
		CumEff[5]	1	0	0	0	0	0	0	0	0	0
			2	10	0	0	0	0	0	0	0	0
			3	80	0	4	4	3	4	0	0	0
			4	10	40	15	15	22	15	10	42	42
			5	0	60	81	81	75	81	90	58	58

Table 15. Mean likelihood scores of viability outcomes carnivores and ungulates for the UCRB Planning Area (continued).

Group[1]	Species Name	Area[2]	Outcome[3]	Period H	Period C	Alternative[4] A1	A2	A3	A4	A5	A6	A7
CAR	Wolverine	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	10	4	7	8	8	9	8	9	9
			3	80	20	13	10	11	12	10	16	21
			4	10	44	41	42	44	43	42	44	50
			5	0	32	39	40	37	36	40	31	20
		CumEff[5]	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	36	0	0	0	0	0	0	0	26
			4	30	4	2	10	2	8	2	10	23
			5	34	96	98	90	98	92	98	90	51
UNG	California bighorn sheep	BLM/FS[5]	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	50	0	0	0	0	0	0	0	0
			4	50	40	40	50	40	40	50	40	10
			5	0	60	60	50	60	60	50	60	90
		CumEff[5]	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	50	0	0	0	0	0	0	0	0
			4	50	30	30	40	30	30	40	30	10
			5	0	70	70	60	70	70	60	70	90
UNG	Pronghorn	BLM/FS[5]	1	10	0	0	0	0	0	0	0	0
			2	80	60	20	20	65	70	20	70	20
			3	10	30	60	60	35	30	60	30	60
			4	0	10	20	20	0	0	20	0	20
			5	0	0	0	0	0	0	0	0	0
		CumEff[5]	1	10	0	0	0	0	0	0	0	0
			2	80	0	0	0	0	0	0	0	0
			3	10	60	10	10	10	10	10	10	10
			4	0	40	50	50	50	50	50	50	50
			5	0	0	40	40	40	40	40	40	40
UNG	Woodland caribou	BLM/FS	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	0	0	0	0	0	0	0	0	0
			4	50	0	0	0	0	0	0	0	46
			5	50	100	100	100	100	100	100	100	54
		CumEff	1	0	0	0	0	0	0	0	0	0
			2	0	0	0	0	0	0	0	0	0
			3	0	0	0	0	0	0	0	0	0
			4	50	0	0	0	0	0	0	0	42
			5	50	100	100	100	100	100	100	100	58

Likelihood scores for each period or alternative sum to 100 points. High scores indicate high likelihood of an outcome. Means are calculated from the individual likelihood scores of panelists.

[1] Group: CAR - carnivore; UNG - ungulate.

[2] Area: BLM/FS - Upper Columbia Basin planning area, BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[3] Outcome: 1 - contiguous; 2 - gaps; 3 - patchy; 4 - isolated; 5 - scarce. See text for complete explanation.

[4] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[5] Species for which panelists' scores were adjusted by Science Team. Scores were adjusted when considered to reflect a misinterpretation or incomplete understanding of the management alternatives or their outcomes, or the species ecology.

Table 16. Mean viability outcomes for habitat and populations of mammalian carnivores and ungulates for the UCRB Planning Area.

Group[1]	Species Name	Area[2]	Period H	Period C	Alternative[3] A1	A2	A3	A4	A5	A6	A7
CAR	American marten	BLM/FS[4]	2.1	3.7	4.2	3.9	3.9	3.0[5]	3.7	3.0[5]	2.7[5]
		CumEff[4]	2.1	4.3	4.4	4.3	4.3	4.1	4.4	4.0	3.6[5]
CAR	Fisher	BLM/FS[4]	2.8	3.8	4.1	3.4	3.4	3.4	3.8	3.4	4.1
		CumEff[4]	2.8	4.8	4.7	4.7	4.8	4.7	4.8	4.6	4.3[5]
CAR	Gray wolf	BLM/FS	1.3	2.1	2.2	2.1	2.2	2.1	2.3	2.1	1.9
		CumEff	1.3	4.2	4.4	4.3	4.4	4.3	4.4	4.3	4.1
CAR	Grizzly bear	BLM/FS	1.4	4.0	4.1	4.1	4.1	4.1	4.1	4.0	3.8
		CumEff	1.5	4.8	4.9	4.9	4.9	4.8	4.9	4.7	4.6
CAR	Lynx	BLM/FS[4]	3.0	4.4	4.5	4.5	4.3	4.6	4.7	4.0	4.1
		CumEff[4]	3.0	4.6	4.8	4.8	4.7	4.8	4.9	4.6	4.6
CAR	Wolverine	BLM/FS[4]	3.0	4.0	4.1	4.1	4.1	4.1	4.1	4.0	3.8
		CumEff[4]	4.0	5.0	5.0	4.9	5.0	4.9	5.0	4.9	4.3[5]
UNG	California bighorn	BLM/FS[4]	3.5	4.6	4.6	4.5	4.6	4.6	4.5	4.6	4.9
		CumEff[4]	3.5	4.7	4.7	4.6	4.7	4.7	4.6	4.7	4.9
UNG	Pronghorn	BLM/FS[4]	2.0	2.5	3.0[5]	3.0[5]	2.4	2.3	3.0[5]	2.3	3.0[5]
		CumEff[4]	2.0	3.4	4.3[5]	4.3[5]	4.3[5]	4.3[5]	4.3[5]	4.3[5]	4.3[5]
UNG	Woodland caribou	BLM/FS	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.5
		CumEff	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.6

Mean outcomes were calculated as the weighted mean of average likelihood scores in each outcomes.

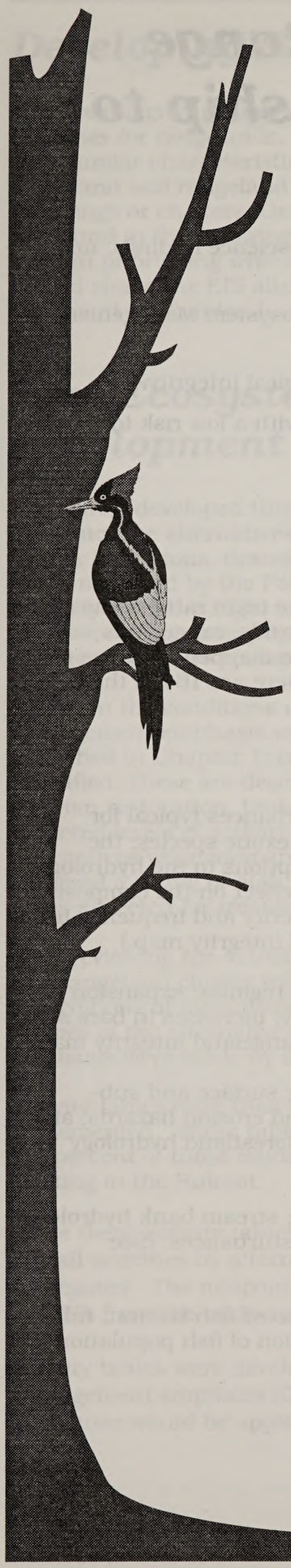
[1] Group: CAR - carnivore; UNG - ungulate.

[2] Area: BLM/FS - Upper Columbia Basin planning area. BLM and Forest Service lands only; CumEff - all lands in Upper Columbia Basin planning area.

[3] Period / Alternative: H - historical pre-European settlement period; C - current; A1 - Alternative 1; A2 - Alternative 2; etc.

[4] Species for which panelists' scores were adjusted by Science Team. Scores were adjusted when considered to reflect a misinterpretation or incomplete understanding of the management alternatives or their outcomes, or the species ecology.

[5] Mean outcome for alternative departs from current outcome by greater than or equal to 0.50 units. Outcomes reported in table were rounded to 0.1 units; but, differences were calculated to 0.01 units. Hence, departure calculated from the table many be misleading.



Appendix L Rule Sets for Management Activity Levels

(Comparable to Portions of Eastside Appendix 3-3)

Contents

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Development of Forest and Range Clusters, and Their Relationship to the Alternatives

The Science Integration Team was asked by the EIS Team, based on their science findings, to identify the following:

1. Those places (on public lands) within the Interior Columbia Basin Ecosystem Management Area where ecological integrity is high, medium, and low.
2. Those places where there are opportunities to improve (restore) ecological integrity.
3. Those places where there are opportunities to produce commodities with a low risk to ecological integrity.

What the Science Team Did

Based on what they learned about past and present conditions, the science team rated areas as having high, medium, and low ecological integrity for the following: forestlands, rangelands, forestland hydrology, rangeland hydrology, and aquatics. The ratings were mapped for areas of approximately 800,000 to one million acres, or the size of river basins. There are 164 of these areas in the project area.

The following characteristics were used in determining the ratings:

Forestland Tree stocking levels consistent with long-term disturbances typical for certain forest types; the amount and distribution of exotic species; the amount of snags and downed woody material; disruptions to the hydrologic regimes; the absence or presence of wildfire and its effect on the composition and patterns of forest types; and changes in fire severity and frequency from historical (pre-1900s) to the present. (See forestland integrity map.)

Rangeland Historical overgrazing; disruptions to the hydrologic regimes; expansion of exotic species; changes in fire severity and frequency; increases in bare soils; and expansion of woodlands into rangelands. (See rangeland integrity map.)

Forestland Hydrology Functions Functioning of biogeochemical cycles; surface and sub-hydrology: surface flows; sediment and erosion hazards; and presence of riparian vegetation. (See forestland hydrology integrity map.)

Rangeland Hydrologic Functions Functioning of biogeochemical cycles; stream bank hydrology: stability; and resiliency to riparian disturbances. (See rangeland hydrology integrity map.)

Aquatic Native fish diversity; presence of high quality, connected fish habitat; full complement of fish life histories; and current condition of fish populations. (See aquatic integrity map.)

Developing Story Lines

The five integrity ratings were integrated and combined into two ratings, one for forestlands and the other for rangelands. Further, the ratings for the 164 river basins were grouped into categories with similar characteristics or story lines. These groupings are referred to as "clusters." (See forestland and rangeland cluster maps in Chapter 2.) Both the forestlands and rangelands have six groupings or clusters. General characteristics of the six clusters for the forestlands and rangelands are found in the following tables. The forestland and rangeland clusters were useful to the EIS team in prioritizing where management activities would occur across the landscape. Public opinion helped shape the EIS alternatives, which have different ways of addressing the Purpose and Need statement in Chapter 1.

How Ecosystem Integrity Was Used in the Development of Alternatives

Story lines developed through the process of identifying ecosystem integrity were used to help construct the alternatives. The story lines, or forest and rangeland clusters of watersheds with similar conditions, described three parameters. First, those places within the Columbia Basin on lands managed by the Forest Service or Bureau of Land Management were rated for ecological integrity as either high, medium, or low. Second, the story lines or clusters reflect opportunities to improve ecologic integrity. Third, clusters are identified where multiple-use benefits can be produced with low ecological risks.

Based on the conditions of the forest and rangeland clusters and the themes of the alternatives, management emphasis was assigned to the clusters by alternative. This included the priorities described in Chapter 1: conserve, restore or produce (C,R,P). Expected activities were then identified. These are described in the Ruleset in the accompanying pages. These activities, such as riparian restoration, timber harvest, and prescribed burning, were further defined in relation to expected levels of activity by alternatives. Using the No-Action alternative as a base, other alternatives were compared for expected levels of activity by cluster. These levels were defined and assigned a rating of high, medium or low. Levels of activity (H,M,L) described percent of certain areas expected for treatment by decade.

After reviewing the activity levels, the EIS team reconfirmed management emphasis. Each forest and rangeland cluster was assigned a final rating of C, R, P, or combinations of these. These descriptions of management priorities and emphasis reflect the conditions of the clusters, the themes of the alternatives, and the expected activity levels. Final assignments of management emphasis were made by cluster by alternative.

Activity tables were then developed to reflect assumptions of how alternatives would be implemented. These tables were derived by taking the acres by cluster and multiplying them by the percent of those lands where activities were expected to occur as described in the H,M, or L ranking in the Ruleset.

Since these activity tables were developed by cluster by alternative, a simple way of displaying overall activities by alternative was developed. Ranges of activities for affected clusters were aggregated. The midpoint on these ranges were identified, and for analysis purposes, a variance of +/-15% from the midpoint was assumed.

Activity tables were developed to aid analysis, not to assign or allocate specific actions. Management emphasis (C,R,P) is carried forth by alternative, and objectives, standards, and guidelines would be applied with this emphasis as a basis for overall management expectations.

Rule Sets for Management Activity Levels by Cluster and Alternative

Table of Contents

SIT

A. Developed individual integrity/departure ratings for forest, range, aquatic, and hydrologic layers based on individual 4th field HUCs.

B. As a result of individual integrity/departure layers, developed an integrated integrity layer for Forested lands and one for Rangelands resulting in combinations or "clusters" of 4th field HUCs. This resulted in: 6 Forest clusters and 6 Range clusters

EIS Team Tables

1. **Summary table ~** key variables summarizing differences among **Forest** Clusters

1R. **Summary table ~** key variables summarizing differences among **Range** Clusters

2. **Activity level Assumptions ~** used to equate H, M, L Activity levels to a "% of **forested** area treated" (calibrated to activity levels in Alternative 1 - No Action.)

2R. **Activity level Assumptions ~** used to equate H, M, L Activity levels to a "% of **rangeland** area treated" (calibrated to activity levels in Alternative 1 - No Action)

3. **Road "density class" calculations ~** an intermediate step used to determine what magnitude of road closures would be required to effect a change between road density classes. Note: this applies to both Forest and Range Clusters

4. **Activity Levels ~** applying H, M, L management activity levels to each **Forest** Cluster by Alternative (based on the theme of the alternative and the condition and characteristics of the cluster.)

4R. **Activity Levels ~** applying H, M, L management activity levels to each **Range** Cluster by Alternative (based on the theme of the Alternative and the condition and characteristics of the cluster)

5. **Alternative 5 "Priority Management Areas" ~** assigning a primary and secondary management priority of Timber, Livestock, Recreation, Aquatics, or Wildlife to each Forest and Range Cluster

6. **Rule Sets ~** a repeatable process used to combine the H, M, L activity levels (from table 2) into a "General Management Emphasis" (Conserve, Restore, Produce) for each **Forest** Cluster for each Alternative

6R. **Rule Sets ~** a repeatable process used to combine the H, M, L activity levels (from table 2R) into a "General Management Emphasis" (Conserve, Restore, Produce) for each **Range** Cluster for each Alternative

7. **Overall Management Strategy by Alternative ~** a summarization of general management emphasis by **Forest** Cluster (used to generate alternative maps)

7R. **Overall Management Strategy by Alternative ~** a summarization of general management emphasis by **Range** Cluster (used to generate Alternative maps)

8. **Conversion from "%" to "acres" ~** used to convert from "% of **forested** area treated" (per decade) for H, M, L activity levels in Table 2 to "acres treated" (in thousands per decade) for H, M, L activity levels. (Used to generate the Management Activity tables in Chapter 3 of the DEIS)

8R. **Conversion from "%" to "acres" ~** used to convert from "% of **rangeland** area treated" (per decade) for H, M, L activity levels in Table 2R to "acres treated" (in thousands per decade) for H, M, L activity levels. (Used to generate the Management Activity tables in Chapter 3 of the DEIS)

Table 1. Summary of Forest Clusters in the Project Area

Variable	Forest Cluster (%) 1	2	3	4	5	6
BLM/Forest Service-administered	80	86	40	58	50	35
Forestlands	83	81	70	88	53	48
Forested Vegetation Groups						
Dry Forest	16	37	35	18	81	51
Moist Forest	27	27	52	73	11	21
Cold Forest	57	36	13	9	8	28
Road Density Classes						
Low or none	85	62	32	20	22	36
Moderate or higher	15	38	68	80	78	64
Fire frequency change	37	60	66	51	60	60
Fire severity increase	36	50	57	47	35	36
High wildland/urban fire interface risk	0	17	6	1	29	10
Moderate wildland/urban fire interface risk	29	61	36	13	30	23
Forest Integrity						
Low	0	10	67	86	79	59
Moderate	0	43	33	10	21	17
High	100	47	0	4	0	24
Aquatic Integrity						
Low	5	0	8	54	52	87
Moderate	38	59	85	46	44	13
High	58	41	7	0	4	0
Hydrologic Integrity						
Low	0	4	47	12	39	76
Moderate	4	30	49	54	41	17
High	96	66	4	34	20	7
Composite Ecological Integrity						
Low	0	0	4	83	96	100
Moderate	0	3	96	17	4	0
High	100	97	0	0	0	0

Source: ICBEMP GIS data (converted to 1 km^2 raster data).

Table 1R. Summary of Range Clusters in the Project Area

Variable	Range Cluster (%) 1	2	3	4	5	6
BLM/Forest Service-administered	36	81	44	5	75	55
Rangelands	54	5	6	29	65	59
Rangeland Vegetation Groups						
Dry Rangeland	49	34	17	30	61	61
Cool Rangeland	34	8	8	3	27	11
Other	17	58	75	67	12	28
Road Density Classes						
Low or none	20	71	30	62	64	30
Moderate or higher	80	29	70	38	36	70
Cropland/pasture	9	3	14	56	5	17
<12" annual precipitation	23	1	2	51	33	38
Fire frequency change	37	51	67	17	24	17
Fire severity increase	18	47	49	13	16	9
High wildland/urban fire risk interface	32	7	12	0	6	8
Moderate wildland/urban fire risk interface	10	59	33	4	58	39
Change in juniper woodland	+12	0	0	0	0	0
Range Integrity						
Low	100	6	76	100	26	79
Moderate	0	37	15	0	50	21
High	0	57	9	0	24	0
Aquatic Integrity						
Low	39	4	43	84	37	79
Moderate	61	24	50	16	57	18
High	0	72	7	0	6	3
Hydrologic Integrity						
Low	34	6	49	100	7	44
Moderate	66	16	35	0	35	34
High	0	78	16	0	58	22
Composite Ecological Integrity						
Low	100	0	58	97	8	80
Moderate	0	3	32	3	63	20
High	0	97	10	0	29	0

Source: ICBEMP GIS data (converted to 1 km^2 raster data).

Table 2. Forest Cluster Activity Level Assumptions

		Low	Moderate	High
Harvest (commercial)	Alts. 1,2,7 >	0-4	0-5	4-8
(% of all forested area treated/decade)	Alts. 3-6 >	5-9	8-10	9-11
Thin (pre-commercial) (% of all forested area treated/decade)		0-3	3-6	6-8
Decrease Road Density (% of native surface road miles reduced/decade)		0-25	25-50	50+ changes road density class
Watershed Restoration (% of all forested area treated/decade)		0-3	3-6	6-8
Prescribe Burning (% of all forested area treated/decade)		0-5	5-9	9-11
Prescribed Fire Plans (% of all forested area for which plans have been implemented)		0-20	20-40	40+

Harvest: All commercial harvest methods (e.g. single tree selection, group selection, shelterwood, seed tree, overstory removal, clearcut, and commercial thinning from above or below)

Thin: All pre-commercial thinnings used to alter forest structure, species composition, density, rate of growth, fuel ladders, fire behavior, etc.

Decrease Road Density: Permanent closure of native surface roads.

Watershed Restoration: Includes increased road maintenance, improved road condition (surface and/or drainage), reduced road related erosion, road obliteration, road de-commissioning, increased LWM, riparian plantings, in-channel restoration, etc.

Prescribed Burning: Management ignited fire.

Prescribed Fire Plan: Allows natural ignition fires to burn when in prescription and/or identifies areas that require prescribed burning.

Table 2R. Range Cluster Activity Level Assumptions

	Low	Moderate	High
Livestock Management (% of all rangeland with improved management)	0-6	6-12	12-20
Improve Rangelands (% of all rangeland treated/decade)	0-4	4-8	8-11
Decrease Road Density (% of native surface road miles reduced/decade)	0-25	25-50	50+ changes road density class
Riparian Restoration (% of all riparian areas treated/decade)	0-25	25-50	50-75
Prescribed Burning (% of all rangeland treated/decade)	0-3	3-6	6-9
Prescribed Fire Plan (% of all rangeland for which plans have been implemented)	0-20	20-40	40+

Livestock Management: A summation of livestock management variables that affect rangeland health, including grazing systems, changing riparian grazing management, season of use (length and timing), number of head, change of class, distribution, grazing deferment, and herding.

Improve Rangelands: Capital Investments: fencing, stockwater improvements, seedings, control of invasion or spread of exotics, and non-fire shrub and juniper control.

Decrease Road Density: Permanent closure of native surface roads.

Riparian Restoration: Includes improving road condition (drainage and/or surface), riparian plantings, in-channel restoration, and riparian exclosures.

Prescribed Burning: Management-ignited fire.

Prescribed Natural Fire: Allows natural ignition fires to burn when in prescription and/or identifies areas that require prescribed burning.

Table 3. Changing Road Density Class[1]

Class	Density (miles/ sq. mile)	Mean Density	Multiplier (between classes)	Percent of roads that would have to be closed to drop one density class.
None	0 - .02	.006	10	90
Very Low	.02 - .1	.06	7	80
Low	.1 - .7	.4	3	70
Moderate	.7 - 1.7	1.2	2.5	60
High	1.7 - 4.7	3.2	2	50
Extreme	4.7+	6		

[1]Calculations depicting the percent of road closures necessary to effect a change in road density class.

Table 4. Activity Levels By Forest Cluster by Alternative

Action	Alternative 1	2	3	4	5	6	7
Forest Cluster 1							
Harvest	L	L	L	L	L	L	L
Thin	L	L	L	L	L	L	L
Decrease road density	L	L	L	L	L	L	L
Watershed restoration	L	M	M	M	M	M	L
Prescribed burning	L	L	M	H	L	M	L
Prescribed fire plans	H	H	H	H	H	H	H
Alternative 5 Management Priority: Primitive Recreation/Aquatics							
Forest Cluster 2							
Harvest	M	L	L	L	L	L	L
Thin	L	L	L	M	L	M	L
Decrease road density	L	L	M	M	L	M	M
Watershed restoration	L	M	M	H	M	M	L
Prescribed burning	L	L	M	H	M	M	L
Prescribed fire plans	H	H	H	H	H	H	H
Alternative 5 Management Priority: Aquatics/Recreation							
Forest Cluster 3							
Harvest	H	M	M	M	M	L	L
Thin	M	L	M	H	H	M	L
Decrease road density	L	L	M	M	M	H	H
Watershed restoration	L	M	M	M	M	M	L
Prescribed burning	L	L	M	M	M	M	M
Prescribed fire plans	L	L	L	M	M	M	H
Alternative 5 Management Priority: Aquatics/Timber							
Forest Cluster 4							
Harvest	H	M	M	M	H	M	L
Thin	M	M	H	H	H	H	L
Decrease road density	L	L	M	M	L	M	M
Watershed restoration	L	L	L	M	L	M	L
Prescribed burning	L	L	L	M	L	M	M
Prescribed fire plans	L	L	L	M	L	M	M
Alternative 5 Management Priority: Timber/Wildlife							
Forest Cluster 5							
Harvest	H	L	M	M	M	L	L
Thin	M	M	H	H	H	H	M
Decrease road density	L	M	H	H	M	M	H
Watershed restoration	L	L	L	M	M	M	L
Prescribed burning	L	L	M	H	M	H	L
Prescribed fire plans	L	L	M	H	H	H	M
Alternative 5 Management Priority: Timber/Livestock							
Forest Cluster 6							
Harvest	M	L	L	L	M	L	L
Thin	L	L	H	H	M	H	L
Decrease road density	L	L	L	M	L	L	L
Watershed restoration	L	L	L	L	L	L	L
Prescribed burning	L	L	M	M	M	M	M
Prescribed fire plans	L	L	M	M	L	M	M
Alternative 5 Management Priority: Wildlife/Recreation							

Table 4R. Activity Levels by Range Cluster By Alternative

Action	Alternative 1	2	3	4	5	6	7
Range Cluster 1							
Livestock management	L	M	M	M	L	M	H
Improve rangelands	L	L	M	M	L	M	L
Decrease road density	L	L	L	H	M	M	M
Riparian restoration	L	L	L	M	L	M	L
Prescribed burning	L	L	M	H	M	H	M
Prescribed fire plans	L	L	M	H	H	H	H
Alternative 5 Management Priority: Livestock/Timber							
Range Cluster 2							
Livestock management	H	H	H	H	H	H	H
Improve rangelands	L	L	L	L	L	L	L
Decrease road density	L	L	L	L	L	L	L
Riparian restoration	L	L	L	M	L	M	L
Prescribed burning	L	L	M	H	M	M	L
Prescribed fire plans	H	H	H	H	H	H	H
Alternative 5 Management Priority: Recreation/Aquatics							
Range Cluster 3							
Livestock management	M	H	H	H	H	H	H
Improve rangelands	L	L	L	M	M	M	L
Decrease road density	L	L	L	M	L	L	M
Riparian restoration	L	M	M	M	L	L	L
Prescribed burning	L	L	M	H	M	M	L
Prescribed fire plans	L	L	M	H	M	H	H
Alternative 5 Management Priority: Recreation/Wildlife							
Range Cluster 4							
Livestock management	L	M	M	M	M	M	H
Improve rangelands	L	L	L	M	L	M	L
Decrease road density	L	L	M	M	L	M	M
Riparian restoration	L	L	L	M	M	M	M
Prescribed burning	L	L	M	M	L	L	L
Prescribed fire plans	L	L	L	M	L	M	M
Alternative 5 Management Priority: Wildlife							
Range Cluster 5							
Livestock management	L	M	M	H	M	H	H
Improve rangelands	L	L	M	M	L	L	L
Decrease road density	L	L	L	L	L	L	L
Riparian restoration	L	L	M	M	M	M	L
Prescribed burning	L	L	M	M	L	M	M
Prescribed fire plans	L	L	L	M	L	M	H
Alternative 5 Management Priority: Livestock/Recreation							
Range Cluster 6							
Livestock management	L	M	M	H	M	H	H
Improve rangelands	L	L	M	H	M	M	L
Decrease road density	L	L	L	M	L	M	M
Riparian restoration	L	L	M	M	M	M	M
Prescribed burning	L	L	L	L	L	L	L
Prescribed fire plans	L	L	L	L	L	L	M
Alternative 5 Management Priority: Livestock/Wildlife							

Table 5. Alternative 5 "Priority Management" Areas

	Primary Priority	Secondary Priority
Forest Cluster		
1	Primitive Recreation	Aquatics
2	Aquatics	Recreation
3	Aquatics	Timber
4	Timber	Wildlife
5	Timber	Livestock
6	Wildlife	Recreation
Range Cluster		
1	Livestock	Timber
2	Recreation	Aquatics
3	Recreation	Wildlife
4	Wildlife	-----
5	Livestock	Recreation
6	Livestock	Wildlife

Table 6. RULE SET - Process for combining Activity Levels into a "General Management Emphasis", Forest Clusters

The following describes how "general management emphases" were established for the Forest clusters for each alternative based on the activity levels.

Management Emphasis (general emphasis applied to the "Cluster/Alternative theme" combination)

C	Conserve
C-R	Conserve/Restore
R	Restore
R-P	Restore/Produce
P	Produce
P-C	Produce/Conserve

The emphasis categories are assigned by the level of production (harvest) and restoration (thin, road density reduction, watershed restoration, prescribed burning) activities.

Management Emphasis	Rule Set Harvest	Restoration Activities
C	Low	1 or less restoration activity > or = Mod
C-R	Low	2 restoration activities > or = Mod
R	Low or Mod	3 or more restoration activities > or = Mod
R-P	Mod or High	2 restoration activities > or = Mod
P	High	1 or less restoration activity > or = Mod
P-C	Mod	1 or less restoration activity > or = Mod

Table 6R. RULE SET - Process for combining Activity Levels into a "General Management Emphasis", Range Clusters

The following describes how "general management emphases" were established for the Range clusters for each alternative based on the activity levels.

Management Emphasis (general emphasis applied to the "Cluster/Alternative theme" combination)

C	Conserve
C-R	Conserve/Restore
R	Restore
R-P	Restore/Produce
P	Produce
P-C	Produce/Conserve

The emphasis categories are assigned by the level of livestock management and restoration (rangeland improvements, road density reduction, riparian restoration, prescribed burning) activities.

Management Emphasis	Level of Livestock Mgmt.	Restoration Activities
C	High	1 or less restoration activity > or = Mod
C-R	High	2 restoration activities > or = Mod
R	Mod or High	3 or more restoration activities > or = Mod
R-P	Low or Mod	2 restoration activities > or = Mod
P	Low	1 or less restoration activity > or = Mod
P-C	Mod	1 or less restoration activity > or = Mod

Table 7. Overall Management Strategy by Alternative (Summarization of General Management Emphasis by Forest Cluster)

Forest Cluster	Alternatives 1	2	3	4	5	6	7
1	C	C	C-R	C-R	C	C-R	C
2	P-C	C	R	R	C-R	R	C
3	P	P-C	R	R	R	R	C-R
4	P	P-C	R-P	R	P	R	C-R
5	P	C-R	R	R	R	R	C-R
6	P-C	C	C-R	R	R-P	C-R	C

Table 7R. Overall Management Strategy by Alternative
(Summarization of General Management Emphasis by Range Cluster)

Forest Cluster	Alternatives 1	2	3	4	5	6	7
1	P	P-C	R-P	R	R-P	R	C-R
2	C	C	C	C-R	C	C-R	C
3	P-C	C	C-R	R	C-R	C-R	C
4	P	P-C	R-P	R	P-C	R	C-R
5	P	P-C	R	R	P-C	C-R	C
6	P	P-C	R-P	R	R-P	R	C-R

Table 8. Management Activity Levels in Forest Clusters, in Acres

HARVEST

Alternatives 1, 2 & 7

Forest Acres (x 1,000)	Forest Cluster	Acres (in the first decade) Low 0-4%	Moderate 4-8%	High 8-10%
		in thousands		
5,156	1	0 - 200	200 - 400	400 - 500
10,724	2	0 - 450	450 - 850	850 - 1,050
3,955	3	0 - 150	150 - 300	300 - 400
9,296	4	0 - 350	350 - 750	750 - 950
7,560	5	0 - 300	300 - 600	600 - 750
2,687	6	0 - 100	100 - 200	200 - 250

Alternatives 3, 4, 5, & 6

Forest Acres (x 1,000)	Forest Cluster	Acres (in the first decade) Low 0-5%	Moderate 5-9%	High 9-11%
		in thousands		
5,156	1	0 - 250	250 - 450	450 - 550
10,724	2	0 - 550	550 - 950	950 - 1200
3,955	3	0 - 200	200 - 350	350 - 450
9,296	4	0 - 450	450 - 850	850 - 1000
7,560	5	0 - 400	400 - 700	700 - 850
2,687	6	0 - 150	150 - 250	250 - 300

Table 8. Management Activity Levels in Forest Clusters, in Acres (continued)

THIN

Forest Acres (x 1,000)	Forest Cluster	Acres (in the first decade) Low 0-3%	Moderate 3-6%	High 6-8%
			in thousands	
5,156	1	0 - 150	150 - 300	300 - 400
10,724	2	0 - 300	300 - 650	650 - 850
3,955	3	0 - 100	100 - 250	250 - 300
9,296	4	0 - 300	300 - 550	550 - 750
7,560	5	0 - 250	250 - 450	450 - 600
2,687	6	0 - 100	100 - 150	150 - 200

PRESCRIBED BURNING

Forest Acres (x 1,000)	Forest Cluster	Acres (in the first decade) Low 0-5%	Moderate 5-9%	High 9-11
			in thousands	
5,156	1	0 - 250	250 - 450	450 - 550
10,724	2	0 - 550	550 - 950	950 - 1,200
3,955	3	0 - 200	200 - 350	350 - 450
9,296	4	0 - 450	450 - 850	850 - 1,000
7,560	5	0 - 400	400 - 700	700 - 850
2,687	6	0 - 150	150 - 250	250 - 300

WATERSHED RESTORATION

Forest Acres (x 1,000)	Forest Cluster	Acres (in the first decade) Low 0-3%	Moderate 3-6%	High 6-8%
			in thousands	
5,156	1	0 - 150	150 - 300	300 - 400
10,724	2	0 - 300	300 - 650	650 - 850
3,955	3	0 - 100	100 - 250	250 - 300
9,296	4	0 - 300	300 - 550	550 - 750
7,560	5	0 - 250	250 - 450	450 - 600
2,687	6	0 - 100	100 - 150	150 - 200

Table 8R. Management Activity Levels in Range Clusters, in Acres

LIVESTOCK MANAGEMENT

Range Acres (x 1,000)	Range Cluster	Acres (in the first decade) Low 0-6%	Moderate 6-12%	High 12-20%
			in thousands	
1,632	1	0 - 100	100 - 195	
103	2	0 - 6	6 - 12	12 - 20
107	3	0 - 6	6 - 12	12 - 20
32	4	0 - 2	2 - 4	
13,367	5	0 - 800	800 - 1600	1600 - 2670
14,640	6	0 - 880	880 - 1760	1760 - 2925

IMPROVE RANGELANDS

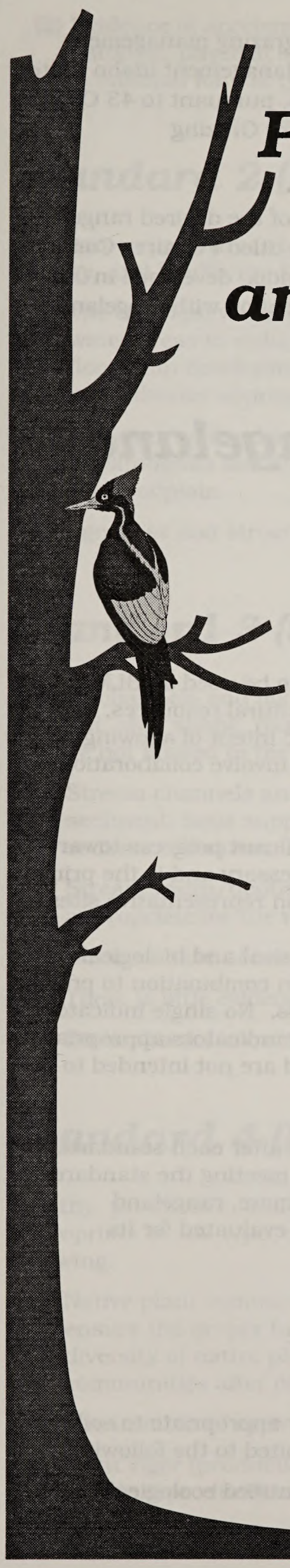
Range Acres (x 1,000)	Range Cluster	Acres (in the first decade) Low 0-4%	Moderate 4-8%	High 8-11%
			in thousands	
1,632	1	0 - 65	65 - 130	130 - 180
103	2	0 - 5	5 - 10	
107	3	0 - 5	5 - 10	
32	4	0 - 5		
13,367	5	0 - 535	535 - 1070	1070 - 1470
14,640	6	0 - 585	585 - 1170	1170 - 1610

PRESCRIBED BURNING

Range Acres (x 1,000)	Range Cluster	Acres (in the first decade) Low 0-3%	Moderate 3-6%	High 6-9%
			in thousands	
1,632	1	0 - 50	50 - 100	100 - 150
103	2	0 - 5	5 - 10	
107	3	0 - 5	5 - 10	
32	4	0 - 5		
13,367	5	0 - 400	400 - 800	
14,640	6	0 - 440	440 - 880	

RIPARIAN RESTORATION

Range Cluster	Acres (in the first decade) Low 0-25%	Moderate 25-50%	High 50-75%
		in thousands	
1	0 - 10	10 -20	
2	0 - 1		
3	0 - 1		
4	0 - 1		
5	0 - 65	65 - 135	
6	0 - 75	75 - 145	



Appendix M
Proposed Standards for Rangeland Health and Proposed Guidelines for Livestock Grazing Management

This Appendix contains the following items:

- *Proposed Standards for Rangeland Health - Idaho*
- *Proposed Guidelines for Livestock Grazing Management - Idaho*

The following standards for rangeland health and guidelines for livestock grazing management would apply in Idaho. They have been developed by the Bureau of Land Management Idaho State Director in consultation with the three affected resource advisory councils, pursuant to 43 CFR 4180 (Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration).

These standards for rangeland health have been listed in this EIS as part of the desired range of future conditions for Alternatives 3 through 7. (Please refer to the section titled Features Common to Alternatives 3 to 7, in Chapter 3.) The guidelines included in this appendix, developed in consultation with the resource advisory councils, were developed in coordination with rangeland management specialists on the interdisciplinary team that wrote this EIS.

Proposed Standards For Rangeland Health ~ Idaho

Introduction

The standards for rangeland health, as applied in the State of Idaho, are to be used as BLM's management goals for the betterment of the environment, protection of cultural resources, and sustained productivity of the range. They were developed with the specific intent of allowing for the multiple use of the public lands. Application of the standards should involve collaboration between the authorized officer, interested publics, and resource users.

Rangelands should be in a properly functioning condition or making significant progress toward meeting the standards for rangeland health. Monitoring of all uses is necessary and is the primary tool for determining rangeland condition and trend. It will be performed on representative sites.

Appropriate to soil type, climate, and landform, indicators are typical physical and biological factors and processes that can be measured or observed. They are used in combination to provide information necessary to determine the health and condition of rangelands. No single indicator provides sufficient information to determine rangeland health. Only those indicators appropriate to a particular site are to be used. The indicators listed below each standard are not intended to be all inclusive.

The issue of scale must be kept in mind in evaluating the indicators listed after each standard. It is recognized that individual isolated sites within a landscape may not be meeting the standards; however, broader areas must be in proper functioning condition. Furthermore, rangeland fragmentation which reduces the effective size of large areas must also be evaluated for its consequences.

Standard 1 (Watersheds)

Watersheds provide for natural infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform. Indicators may include but are not limited to the following:

(1) The amount and distribution of ground cover, including litter, for identified ecological site(s) or soil-plant associations is appropriate for site stability.

(2) Evidence of accelerated erosion (in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/surface sealing, and compaction layers below the soil surface) is minimal for soil type and landform.

Standard 2 (Riparian Areas and Wetlands)

Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform. Indicators may include but are not limited to the following:

(1) The riparian/wetland vegetation is controlling erosion, stabilizing streambanks, shading water areas to reduce water temperature, stabilizing shorelines, filtering sediment, aiding in floodplain development, dissipating energy, delaying flood water, and increasing recharge of groundwater appropriate to site potential.

(2) Riparian/wetland vegetation with deep strong binding roots is sufficient to stabilize streambanks and shorelines. Invader and shallow rooted species are a minor component of the floodplain.

(3) Age class and structural diversity of riparian/wetland vegetation are appropriate for the site.

Standard 3 (Stream Channel/Floodplain)

Stream channels and floodplains are properly functioning relative to the geomorphology (such as gradient, size, shape, roughness, confinement, and sinuosity) and climate. Indicators may include but are not limited to the following:

(1) Stream channels and floodplains dissipate energy of high water flows and transport sediment. Soils support appropriate riparian-wetland species, allowing water movement, sediment filtration, and water storage. Stream channels are not entrenching.

(2) Stream width/depth ratio, gradient, sinuosity, and pool, riffle and run frequency are appropriate for the valley bottom type, geology, hydrology and soils.

(3) Streams have access to their floodplains, and sediment deposition is evident.

(4) There is little evidence of excessive soil compaction due to human activities.

(5) Streambanks are within an appropriate range of stability according to site potential.

Standard 4 (Native Plant Communities)

Healthy, productive, and diverse populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform. Indicators may include but are not limited to the following:

(1) Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species. Where native communities exist, the conversion to exotic communities after disturbance will be minimized.

(2) The number of native species is maintained.

(3) Plant vigor (production, seed and seedstalk production, cover, and the like) is adequate to enable reproduction and recruitment of plants when favorable climatic events occur.

(4) Noxious weeds are not increasing.

(5) Adequate organic matter (litter and standing dead plant material) is present for site protection and for decomposition to replenish soil nutrients relative to site potential.

Standard 5 (Seedings)

Rangelands seeded with mixtures including predominately non-native plants are functioning to maintain lifeform diversity, production, nutrient cycling, energy flow, and the hydrologic cycle. Indicators may include but are not limited to the following:

(1) In established seedings, the number of perennial species is not diminished over time.

(2) Plant production, seed production, and cover are adequate to enable recruitment when favorable climatic events occur.

(3) Noxious weeds are not increasing.

(4) Adequate organic matter (litter and standing dead plant material) is present for site protection and for decomposition to replenish soil nutrients relative to site potential.

Standard 6 (Undesirable Exotic Plant Communities)

Until feasible, cost-effective rehabilitation treatments are developed, communities of undesirable exotic plants will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. Indicators may include but are not limited to the following:

(1) Noxious weeds are not increasing.

(2) The number of perennial species is not diminished over time.

(3) Plant vigor (production, seed and seedstalk production, cover, and the like) of remnant native or seeded (introduced) plants is maintained to enable reproduction and recruitment when favorable climatic or other environmental events occur.

(4) Adequate organic matter (litter and standing dead plant material) is present for site protection and for decomposition to replenish soil nutrients relative to site potential.

Standard 7 (Water Quality)

Surface and ground water on public lands fully support, or are making significant progress toward fully supporting, designated beneficial uses described in the Idaho Water Quality Standards (IDAPA 16.01.02)

Standard 8 (Threatened and Endangered Plants and Animals)

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Proposed Guidelines For Livestock Grazing Management ~ Idaho

Introduction

Guidelines direct the selection of Grazing Management Practices (GMPs) to ensure progress toward or attainment and maintenance of the standards. Grazing Management Practices are livestock management techniques. They include the manipulation of season, duration (time), and intensity of use, as well as numbers, distribution, and kind of livestock. Livestock management facilities are structures such as fences, corrals, and water developments (such as ponds, springs, pipelines, troughs) used to facilitate the application of GMPs. Livestock grazing management practices and guidelines will be consistent with the Idaho Agricultural Pollution Abatement Plan.

Grazing Management Practices and facilities are implemented locally on a pasture, allotment, or watershed basis. Grazing Management Practices will be developed through consultation, coordination, and cooperation with the BLM, permittee, other agencies, tribes, and interested publics.

These guidelines were prepared under the assumption that regulations and policies regarding grazing on public lands will be implemented and will be adhered to by the grazing permittees and agency personnel. If the regulations and policies are not followed, these guidelines will not be effective in achieving the desired rangeland health.

Anything not covered in these guidelines will be addressed by existing laws, regulations, and policies.

Guidelines

1. The BLM will identify and document within the local watershed all impacts that affect the ability to meet the standards. If a standard is not being met due to livestock grazing, then allotment management will be adjusted unless it can be demonstrated that significant progress toward the standard is being achieved. This applies to all subsequent guidelines.

2. The use of GMPs will maintain or promote significant progress toward adequate amounts of ground cover (determined on an ecological site basis) to support infiltration, maintain soil moisture storage, and stabilize soils.

3. Livestock management facilities will be located away from riparian areas wherever they conflict with achieving or maintaining riparian-wetland function.

4. GMPs maintain or promote soil conditions that support water infiltration, plant vigor, permeability rates, and minimize soil compaction appropriate to site potential.

5. Grazing Management Practices provide periodic rest during critical growth stages to allow sufficient regrowth to achieve and maintain healthy, properly functioning conditions, including good plant vigor and adequate vegetative cover, appropriate to site potential.

6. Grazing Management Practices maintain or promote sufficient residual vegetation to improve, restore, or maintain healthy riparian-wetland functions and structure for energy dissipation, sediment capture, ground water recharge, streambank stability, and wildlife habitat appropriate to site potential.

7. The development of springs, seeps, or other projects affecting water and associated resources shall be designed to protect the ecological functions, wildlife habitat, and significant cultural and historical/archaeological/paleontological values associated with the water source.

8. Grazing Management Practices maintain, promote, or progress toward appropriate stream channel and streambank morphology and functions. Adverse impacts due to livestock grazing will be addressed.

9. Grazing Management Practices maintain or promote the interaction of the hydrologic cycle, nutrient cycle, and energy flow that will support the appropriate types and amounts of soil organisms, plants, and animals appropriate to soil type, climate, and landform.

10. Apply GMPs to maintain adequate plant vigor for seed production, seed dispersal, and seedling survival of desired species relative to soil type, climate, and landform.

11. Maintain or improve water quality to meet Idaho Water Quality Standards.

12. Use GMPs developed in recovery plans, conservation agreements, and Endangered Species Act Section 7 consultations to maintain or improve habitat for federally listed threatened, endangered, and sensitive plants and animals.

13. Grazing Management Practices maintain or promote the physical and biological conditions necessary to sustain native plant populations and wildlife habitats in native plant communities.

14. On areas seeded predominantly with non-native plants, GMPs maintain or promote the physical and biological conditions to achieve healthy rangelands.

15. Native species are emphasized for rehabilitating disturbed rangelands. Evaluate whether native plants are adapted, available, and able to compete with weeds or seeded exotics.

16. Use non-native plant species for rehabilitation only in those situations where:

    a. Native species are not readily available in sufficient quantities;

    b. Native plant species cannot maintain or achieve the standards; or

    c. Where non-native plant species provide for management and protection of native range lands.

    Include a diversity of appropriate grasses, forbs, and shrubs in rehabilitation efforts.

17. On burned areas, allow natural regeneration when it is determined that populations of native perennial shrubs, grasses, and forbs are sufficient to revegetate the site. Rest burned or rehabilitated areas to allow recovery or establishment of perennial plant species.

18. Carefully consider the effects of new management facilities (for example, water developments, fences) on healthy and properly functioning rangelands prior to implementation.

19. Use GMPs, where feasible, for wildfire control and to reduce the spread of target undesirable plants (for example, cheatgrass, medusahead wildrye, and noxious weeds) while enhancing vigor and abundance of desirable native or seeded species.

20. Encourage permittees to participate in watershed advisory groups as they are formed throughout the state.

21. Employ GMPs that promote natural forest regeneration and protect reforestation projects until The Idaho Forest Practices Act (IDAPA 20.02.01.050) requirements for timber stand replacement are met.

22. Design management fences to minimize adverse impacts, such as habitat fragmentation, to maintain habitat integrety and connectivity for native plants and animals.

23. Non-native animal habitat may be considered when consistent with rangeland health.

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Acronyms and Symbols

AEC	Assessment of Ecosystem Components
AFSEEE	Association of Forest Service Employees for Environmental Ethics
ARPA	Archaeological Resources Protection Act
ASQ	Allowable Sale Quantity
AUM	Animal Unit Month
BBF	Billion Board Feet
BEA	Bureau of Economic Analysis
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CRBSUM	Columbia River Basin Successional Model
CWD	Coarse Woody Debris
DBH	Diameter at Breast Height (4.5 feet)
DEIS	Draft Environmental Impact Statement
DRFC	Desired Range of Future Conditions
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERU	Ecological Reporting Unit
ESA	Endangered Species Act
EAWS	Ecosystem Analysis at the Watershed Scale
FACA	Federal Advisory Committee Act
FEIS	Final Environmental Impact Statement
FEMAT	Forest Ecosystem Management Assessment Team
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy and Management Act
FOIA	Freedom of Information Act
FSH	Forest Service Handbook
FSM	Forest Service Manual
GIS	Geographic Information System
HRV	Historical Range of Variability
HUC	Hydrologic Unit Code
ICBEMP	Interior Columbia Basin Ecosystem Management Project
INFISH	Interim Inland Native Fish Strategy for the Forest Service's Intermountain, Northern, and Pacific Northwest Regions
IWM	Integrated Weed Management
MMBF	Million Board Feet
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service (formerly Soil Conservation Service)
NOI	Notice of Intent
PAC	Provincial Advisory Committee
PACFISH	Environmental Assessment for the Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California
PFC	Proper Functioning Condition
PILT	Payment in Lieu of Taxes
PVG	Potential Vegetation Group
PVT	Potential Vegetation Type
RAC	Resource Advisory Council
RCA	Riparian Conservation Area
RMO	Riparian Management Objective
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
RHCA	Riparian Habitat Conservation Area (PACFISH)
SCORP	Statewide Comprehensive Outdoor Recreation Program
SIT	Science Integration Team
STAR	Staff Area Report (see AEC)
TMDL	Total Maximum Daily Load
UCRB	Upper Columbia River Basin
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
>	Greater than
<	Less than